

A Report in Support of

**A PROPOSAL FOR AN INTEROPERABLE  
LAND INFORMATION SYSTEM FOR THE  
STATE OF NEBRASKA**

**Program Conceptual Design**

Prepared for the

**NEBRASKA GIS STEERING COMMITTEE**

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# A PROPOSAL FOR AN INTEROPERABLE LAND INFORMATION SYSTEM FOR THE STATE OF NEBRASKA

## Program Conceptual Design

### A. Introduction

This document provides a high level vision and proposal for an interoperable land information for the State of Nebraska. This proposal takes the form of a conceptual system design that is organized around and addresses key affected business processes, data, technology, and organizational considerations. The discussion of each of these system components includes a proposed architecture and policy mechanisms and instruments. The conceptual design is preceded by a problem statement that states, at a high level, a business case for the development of the system.

This document has been developed as part of a larger process of a land records modernization study. This study has had four discrete phases:

- A review of leading institutional models for land records modernization. This effort has provided valuable information to this process by identifying both “best practices” and “lessons learned” from a representative sample of states who have undertaken similar programs;
- An assessment of the current situation including the status and need for land records modernization in Nebraska. This assessment included both a comprehensive survey of local governments and interviews with key stakeholders at the state level;
- The development of a conceptual design and vision for a modernization program; and
- The creation of a plan for the next steps toward the development of a land information program for Nebraska

### B. Problem Statement

The status of land information in the State of Nebraska, in the aggregate, is unsatisfactory. While a few municipalities, counties, and regional agencies<sup>1</sup> have exemplary, modern land information systems, the bulk of local government in the state relies on archaic, manual systems to manage land records, parcel, and related information. This lack of automation is inefficient, limits productivity, and impedes local government’s ability to provide mandated services. In comparison, many Midwestern and Western states have embarked on programs to improve geographic and land information on a statewide basis.

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<sup>1</sup> In particular, Douglas, Lancaster, Hall, and Scottsbluff Counties have modern, automated systems that support a range of business functions and public access.

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The following example illustrates both efficiency and productivity deficits. At the most basic level, parcel maps are used by a wide range of municipal, county, regional, state, and federal agencies as part of their normal business processes. Keeping hardcopy parcel maps up to date requires that each copy must be edited directly or reproduced in whole and redistributed. Either approach is time consuming and labor intensive. As a way to avoid these expenses, some agencies use parcel data that is known to be out of date or is otherwise inaccurate. Often, where there is no formal mechanism for update, multiple versions of the same data are maintained by the various agencies that need the data to fulfill their business processes and mandates.

In an automated environment, parcel information can be maintained transactionally by its custodian as part of normal workflows. In turn, this data is made available electronically to users across government, in an up-to-date form. Ideally, users will add value to the data either through quality control or associating new or different data and making those changes available to other users. Automation affords government the opportunity to avoid the time, labor, and expense of manual maintenance and distribution. Perhaps more importantly, automation presents the opportunity to streamline and improve business processes.

While not a budget line item, the lack of automation, and the inefficiency and impaired productivity that results, costs local governments. These costs are not abstract. Some cities in Nebraska have developed their parcel map databases, duplicating work done at the County level<sup>2</sup>. The cost of this duplication is borne by the taxpayer and is, technically, unnecessary. In those Nebraska jurisdictions with successful land information programs, cities and counties share a wide range of information, validating the notion that duplication is unnecessary.

There are numerous examples of the need for more modern land information systems in the State of Nebraska. While some of the more populous counties and cities have made progress in automating and modernizing land information and related systems, the vast majority have not. There is an explicit financial cost to the taxpayers because of the lack of automation and modernization. In addition, there is a significant loss of opportunity, particularly in terms of the effectiveness of governmental operations. These and other implications are further developed below (see Section C Factual Context).

## C. Factual Context

### 1. Overview

The development of this conceptual design was based upon an intensive fact investigation exercise. The purpose of this fact investigation was to evaluate the status of land records, their management and maintenance across the State. Although only a representative sampling of cities and counties was originally contemplated, this survey was extended significantly. The survey was conducted using both traditional paper and internet based response forms. Rather than sampling 25 to 35 cities and counties, all 93 Counties and 30 of the State's largest municipalities were surveyed. Remarkably, nearly all of those surveyed responded in some form. 91 counties (98%) and 28 municipalities (93%) provided responses. In some cases, municipalities and counties provided joint responses. Summary results are attached in Appendix B: Summary Local Government Survey Results

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<sup>2</sup> Nebraska Land Records Modernization Survey 2003, question 21.

This survey, the *Nebraska Land Records Modernization Survey 2003*, reveals that the bulk of cities and counties in the State of Nebraska have yet to adopt modern technologies for the management and maintenance of land records and spatial (map) related non-spatial (database) data. For example, only approximately 26% of Nebraska counties use and maintain parcel mapping in computerized form. Only 21% of counties make use of geographic information systems (GIS). 38% of cities who responded to the survey use GIS (although it should be noted that while all of the counties were surveyed, only the most populous municipalities were surveyed)<sup>3</sup>.

Table 1: Status of Computerized Parcel Mapping in Nebraska Counties

Has your organization created or acquired computerized parcel mapping? <sup>4</sup>	
Yes	21
No, but our organization has plans for computerized parcel mapping.	25
No, there are no plans for computerized parcel mapping at this time.	35

The lack of automation results in parcel map and related information not being maintained on a frequent basis. For example, 31% of Nebraska counties do not maintain parcel maps more often than monthly. In 11% of counties, parcel information is maintained no more often than semi-annually, most of those annually or longer<sup>5</sup>.

The update cycle of parcel information is only part of the issue of currency and usefulness. The vintage and the format of parcel information are also important. The average vintage of cadastral data (in terms of major update status) is 1981. Some parcel mapping has not been updated since 1940<sup>6</sup>. For Nebraska Counties, 86% of survey respondents indicate that actual update cycle for parcel mapping was greater than 10 years<sup>7</sup>.

Many of the business processes of local government require current information to be successful. For example, police and fire dispatch need as current information as is possible. Information that is less than current information could potentially put life and property at risk, including those of the first responders. Planning, zoning, and assessment functions require near real-time data to meet business needs. Even many routine functions, public notices, etc., need timely data. Given the present update and revision cycles, the currency and, therefore, usefulness of parcel mapping in most jurisdictions is questionable.

In addition to being dated, many of the land records that are used by local government are difficult to access because they are in paper form only. Because of their form, many of these records are difficult to aggregate and analyze. While the most severe problems deal with parcel data, similar problems exist for a variety of other kinds of land information, spatial and non-spatial, used by state and local governments. Given that many decisions that must be made both in local and in state government rely on land information, those decisions are in jeopardy.

<sup>3</sup> The percentages calculations that follow are computed by the sum of designated response divided by the number of responses to that question, times 100.

<sup>4</sup> Nebraska Land Records Modernization Survey 2003, question 37.

<sup>5</sup> Id at question 22.

<sup>6</sup> Id at question 30 and 31.

<sup>7</sup> Id at question 32.

In short, there is a need to improve land information systems across the State of Nebraska.

There are, however, many positives upon which to build modern land information systems. First, virtually all of those agencies polled have access to information technology. In addition, 93% of counties and 100% of cities indicated that they had some form of Internet access<sup>8</sup>. As shown in Table 2 most of those that have Internet access have some form of a broadband connection.

Table 2: Type of Internet Access<sup>9</sup>

Internet Connection	City Respondents		County Respondents	
	Number	Percent	Number	Percent
Don't Know	0		13	
Dial-up	3	13%	21	33%
ISDN	0		1	2%
Satellite	0		3	5%
Cable Modem	4	17%	4	6%
DSL	11	48%	18	29%
T1, T3	5	22%	7	11%
AS/400 Network	0		9	14%

In addition, there are examples, both within Nebraska and beyond upon which to gain lessons learned and, potentially, model local systems approaches.

## 2. Other Factual Circumstances

The survey conducted as part of the Nebraska Land Records Study has revealed some significant factual insights. The following is a brief summary of some of the key results.

### a. Expenditures

The following is a summary of local government expenditures for a limited set of geographic and land information system data:

- Local government survey respondents indicate that annual expenditures for parcel map maintenance range up to a statewide total of approximately \$1.9 million<sup>10</sup>. Given that this survey did not reach all local governments, the actual expenditures are higher.
- Respondent's estimated costs of **major revisions to parcel map information** range to \$1.6 million<sup>11</sup>. Although these major revisions and updates are irregular, they represent significant local expenditures.

<sup>8</sup> Id at question 17.

<sup>9</sup> Id at question 18.

<sup>10</sup> Id at question 25. This statistic is derived by aggregating the upper range of estimates for annual cadastral map maintenance

<sup>11</sup> Id at question 35. This statistic is derived by aggregating the upper range of estimated cost for major revisions of cadastral maps

- Respondent's estimates for the creation, development and distribution of GIS data ranges to \$2 million<sup>12</sup>.
- Respondent's expenditures for maintenance of the Public Land Survey run up to \$700,000 annually<sup>13</sup>.

There are two significant points about these financial results:

- Given that this survey did not reach all local governments or affected regional, state and federal agencies, the actual expenditures are much higher. Without further inquiry any estimate of the taxpayers investment would be speculative, but clearly the expenditures are in the millions of dollars per year and more as major revisions are undertaken.
- Second, it should be noted that this survey did not capture all costs associated more broadly with land information systems, only parcels and expenditures for GIS where that applies. There are many other areas of expenditures that may be relevant to this situation. These include a range of spatial data activities, including wetlands, hydrography, hydrology, transportation, flood zone, soil productivity, land use, land cover, and other mapping. These include a variety of non-spatial data activities such as assessment, ownership, document images, licensing, permitting, code enforcement, work order management, and infrastructure asset management

Accordingly, actual expenditures for land information system related data creation and maintenance, system tools and applications, and business processes are considerably higher than the amounts listed above. The key point is that the taxpayers of the State of Nebraska have invested in systems, many of which are now archaic, and are supporting the on-going operations of those systems. The costs of both investment and operations are significant. Moreover, there are ample opportunities to leverage these expenditures to improve efficiency, productivity, and content of the output of these systems.

## **b. Use of Technology**

The use of technology by local governments is mixed. Certainly county governments have made use of the "AS400 Network". The following tables give some clearer expression to the overall use of land information systems and related technologies For the purposes of the following table, CAD refers to computer aid drafting or design. CAD generally refers to automated mapping or cartography. GIS is similar to CAD in the sense that part of a GIS is automated mapping or cartography. GIS is different than CAD for a couple of reasons. In a GIS, database information, text or tables, may be associated with a map feature. For example, a tax parcel has various attributes or characteristics such as assessed value, owners name, etc. that may be related to a particular parcel and stored in a database. GIS is also an analytical tool that enables users to do electronic overlays, conduct spatial analysis, and create on thematic maps on the fly based on overlays and other spatial analyses.

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<sup>12</sup> Id at question 58. This statistic is derived by aggregating the upper range of estimated annual expenditures for creating, updating, integrating, and/or distributing GIS data. This may include cadastral information in some responses.

<sup>13</sup> Id at question 64. This statistic is derived by aggregating the upper range of estimated annual expenditures for Public Land Survey Estimates

Table 3: Use of CAD/GIS<sup>14</sup>

Technology	County	City
Yes, we use CAD	1	4
Yes, we use GIS	12	9
Both GIS and CAD	5	6
Neither	62	10
Don't Know	1	0

Table 4: Technologies Used for Land Records Management<sup>15</sup>

Technology	Cities		Counties	
	Number	Percent	Number	Percent
Don't Know	4	13%	2	2%
Assessors Administrative package	1	3%	56	63%
CAMA	0	DNA	48	54%
GIS	8	26%	17	19%
Grantee/Grantor Indexes	0	DNA	13	15%
Other (e.g., AutoCAD, Etc.)	8	26%	21	24%

What these data suggest is that while there is some level of automation of land records management, it is sparse. The only possible exception is in the case of tools for assessment. Still only roughly half of the counties in Nebraska have automated part or all of those processes.

As was noted in section C.1 above, virtually all local governments (that responded to the survey) in the State have some level of computerization and most have some Internet access. At a minimum, this level of automation provides some basis upon which more modern land information systems may be built.

Furthermore, the statewide "AS400 Network" provides a baseline data communications network from which, at a minimum, non-spatial land information may be organized. In addition, the AS400 Network has generally been perceived as successful and provides some precedent for a statewide technology initiative such as what is proposed in section D, A Conceptual Design for a Land Information Program, described later in this document.

In addition, the market concentration in the State of two computer-aided mass appraisal (CAMA) systems, offer a basic technology framework upon which a statewide system may be built. Presently it is estimated that one of these two systems is installed in approximately 82 of the State's 93 Counties.

### c. Age of Cadastral Mapping

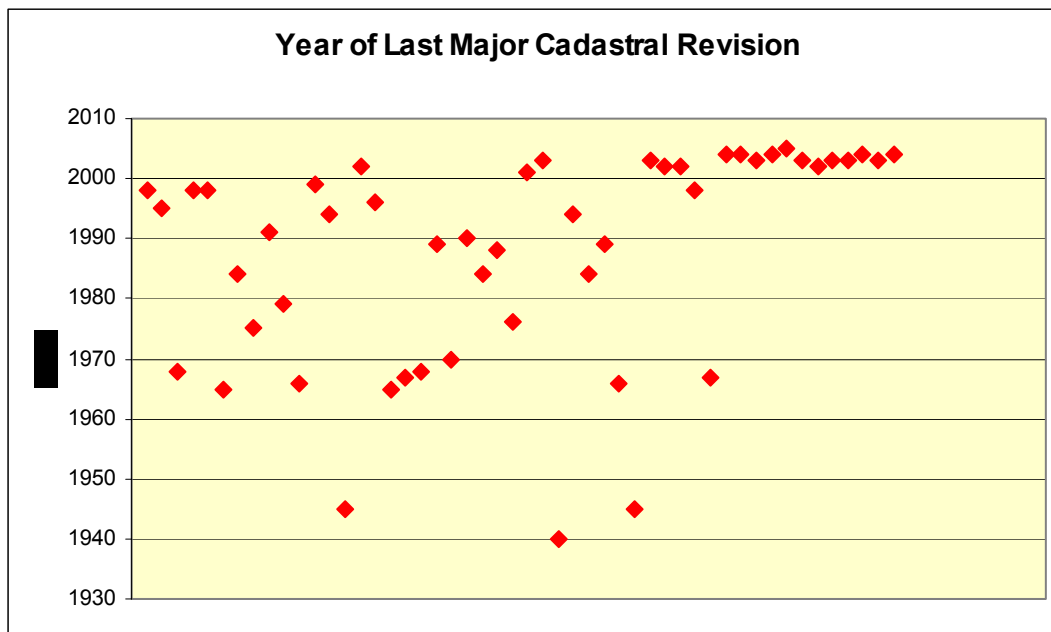
The average vintage of cadastral data (in terms of major update status) is 1981. Actual revision dates range from 1940 to 2003. 64 respondents indicate that there have been no

<sup>14</sup> Id at question 51.

<sup>15</sup> Id at question 14.

major revisions. In a few cases, it was reported that the lack of major revisions is due to the fact that parcel maps are updated and maintained as part of normal business processes. In the digital environment, that is a good long-term solution. However, in the hardcopy map environment, major revisions are required because of source material degradation. For example, paper, linen, or even vellum maps deteriorate over time, whether they are extensively handled or not. Because only 13 counties and 8 cities reported having digital parcel maps, the vast majority of counties and municipalities in the State rely on hardcopy maps that have a limited lifecycle. For those, the vintage of their production parcel maps is a concern. Of the 35 counties and municipalities that have no plans for automating, the need for parcel updates and, ultimately, major revisions do not go away. What is at risk is continued investment in hard copy, manual products. Any further investment in archaic, hard copy products will simply extend the length of time of the inevitable inefficiency.

Figure 1: Year of Last Major Cadastral Revision



#### d. Demographics

There is tremendous variation across the State in terms of population base, resources, business needs, and technical sophistication. The most populous counties and municipalities have been pursuing automation and modernization for some time. Accordingly, any program must be structured so as to help those advanced jurisdictions, while bringing the whole State up to some minimum level of automation and modernizations. The demographic structure of the State has many implications for the development of a statewide system. Some of these implications are addressed in the following sections.

#### e. Technical Assistance

A major perceived need necessary for a successful land information program is technical assistance. Virtually all potential program participants would benefit from some level of technical assistance. Technical assistance was identified by 40% of

#### **State Best Practices Model**

There are many paths to modernization programs. The State of Utah provides one approach model. Utah differs significantly from Nebraska in that so much of its land is federally owned or managed, however it does offer some organizational models and experience which Nebraska should consider. Utah's state-level Automated Geographic Reference Center (AGRC) provides GIS technical assistance, training and service to state agencies and to local governments, particularly in the areas of roads and street address databases and property parcels. At the initiative of its Governor, Utah also has a very proactive geospatial data-sharing program between state, local and federal agencies. Utah also has a Rural Government Geographic Information Systems Program, which seeks to, "afford each county the widest possible latitude in its development and implementation of the County GIS Plan. However, this intent is balanced by the need for the effective use of public funds for programs, which are consistent with, and will ultimately contribute to, development of a statewide GIS effort".

respondents as a policy mechanism that would help in the creation and dissemination of land information<sup>16</sup>.

The fundamental issue is the nature and scope of the technical assistance that might be provided in support of a land information program. Technical assistance could range from some state entity providing services for local government to standards and education.

Part of the technical assistance regime must include prescribed standards and guidelines. To be certain, it will be impossible for the State to provide complete, comprehensive technical assistance to all potential program participants. Accordingly, technical assistance efforts must be focused on initiatives that will have the broadest applicability and greatest impact. This would include basic education, best practices white papers, and outreach. Program participants

need to be as self-sufficient as possible. In some cases, that will mean pooling resources. In other cases, that will mean using professional services from private companies.

#### **f. Coordination and Regionalization**

It is clear that given the demographics of the State, available local resources, and the need for technical assistance, that coordination and collaboration on a regional basis will contribute to the success of the program. Rather than mandating a specific form of regionalization, it will be appropriate for local, regional, and state agencies to form consortia or other intergovernmental arrangements on an ad hoc or as needed basis. In part, this is because there are multiple means for coordination and regionalization of program mechanisms. These include inter-local agreements, Natural Resource Districts, Nebraska Property Assessment and Taxation Department, the Nebraska Department of Roads, the Nebraska Information Technology Commission, the Nebraska GIS Steering Committee, the Public Service Commission, the Nebraska Association of County Officials, the League of Nebraska Municipalities, etc.

#### **g. State Government Interests**

One question that has arisen throughout this project is: What is the State's interest in what appears to be largely a local function? There are multiple answers. First and foremost, local government derives its charter from the State Constitution and State Statutes. While there is sovereignty, State government has many direct interactions with local government that are affected by land information and systems. The State has an obvious interest in ensuring that local government is efficient.

Although not ordinarily recognized, many State and local agencies are very interdependent in carrying out many important governmental functions at both levels

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<sup>16</sup> Id at question 7.



of government. In many ways, State government is very dependent on local government. Simply from a data perspective, there are a number of interactions and State uses of local land information. Some of the “state” functions that are either dependent upon or would greatly benefit from automated local land information include:

**1) Game and Parks Commission**

- Working with existing property owners on wildlife and fisheries management and solutions to or mitigation of wildlife-related problems
- Prospecting for and facilitating the purchase of property for parks, recreation areas and wildlife management
- Managing properties owned or leased by Game and Parks Commission

**2) Department of Roads**

- Right-of-way acquisition

**3) Department of Natural Resources**

- Water rights management
- Groundwater quality management

**4) Department of Economic Development**

- Rapid identification and display of potential industrial or other economic development sites and access to related property data on zoning, acres, ownership, assessed value, etc.
- Assist potential economic development investors to evaluate infrastructure availability (i.e. water, sewer, roads, trains, air, etc.) relative to available development sites.

**5) Department of Environmental Quality**

- Surface water quality protection and management
- Pollution and contamination control and management
- Evaluation of prospective facilities permits

**6) Emergency Management Agency**

- Rapid identification of facilities and resources and related ownership contact information in times of an emergency
- Assist in disaster assessment and mitigation
- Identification and location of critical infrastructure related to homeland security and emergency/disaster response planning

**7) Department of Property Assessment and Taxation**

- Property assessment
- Analysis related to statewide equalization of property assessment

## 8) Board of Education Lands and Funds

- Management of school lands

## 9) Department of Agriculture

- Development and maintenance of riparian buffer strips for surface water quality control
- Rapid identification and location of livestock feedlots for disease control and management (i.e. foot and mouth disease).
- Control and management of noxious weeds, insects, and plant pests or diseases.

The entire state has an interest in improving the efficiency and effectiveness of how land records are maintained. Land record and property ownership information is vital to both the public and private sectors of Nebraska's economy. Banking, real estate, agriculture, and economic development are just a few examples from the private sector economy that are heavily dependent on timely access to accurate land record information. The modernization of land records by moving them to a digital computer environment could greatly enhance the accuracy and currency of this important information. It could also greatly increase the accessibility of this vital information by potentially enabling statewide access through the Internet. Making this important information more accurate and accessible would improve the overall efficiency and effectiveness of state government, local government and the private sector.

In addition to accurate land record information, another dataset that is maintained at the local level and has a high value to the state overall is the computerized mapping of local street centerlines and address data. There is a wide range of state needs and potential uses for this local street address data: Homeland Security, E911 and emergency response to name just a critical few. As with land records, the local government survey showed a tremendous variation in how this important information is being developed and maintained at the local level. There is also no current statewide system for integrating and accessing this critical data. When the state needs for land record information is combined with the needs for street address data, then the state's interest in developing a system to support an interoperable state/local land information system become even more compelling.

## 3. Economic Circumstances

It is generally accepted that best business practices would favor current, accurate, and where possible, digital land information. This is both a matter of efficiency and effectiveness.

### a. Efficiency

The large absence of automation of land information systems means that local and state officials are not as productive as they might be. Simply put, the level of effort required to maintain land information, particularly in map information, in hardcopy form is large and, by necessity, results in duplication because hardcopy products are static. Changes made by primary data custodians must find its way to all of the down stream users of that data. In hardcopy form, that requires either multiple editing or reproduction. Down stream users include many local, regional, state, federal agencies.

In addition, local and state officials also have fewer opportunities to leverage technology to improve business processes (modernization). There are many examples of potential efficiencies. The integrative capability of GIS technology affords the opportunity to facilitate data sharing to reduce needless duplication of effort in the creation and maintenance of data. Beyond data sharing, integration of work and data flows presents opportunities to both reduce overall data costs and improve business processes. The inefficiencies that result from a lack of automation and modernization are more than simple lost opportunity. In that regard, industry benchmark evidence is instructive.

It is difficult to quantify the benefits derived from information technology investments. However, empirical research suggests that the simple act of automation will result in a 10% gain in productivity. When automation is coupled with process improvements, expected productivity gains can be as much as 90%. There are documented cases of productivity increases in excess of 700%<sup>17</sup>. Other research specific to GIS suggests that the development of unified systems that cut across relevant agencies will result in a four-fold return on investment<sup>18</sup>. For example, technology can be leveraged to automate all sorts of processes and functions that previously required human intervention.

These potential benefits are real. The following are examples where efficiency and productivity may be advanced:

- At least 8 of the largest municipalities in Nebraska have acquired their own copies of parcel data. Ideally, those data should be provided by their respective counties. The taxpayers in those municipalities are paying for duplication of effort—both in the collection and maintenance of those parcel data.
- In many jurisdictions, there are multiple versions and/or copies of the same data being maintained and managed in various departments to support various applications. While in the short run that may be rational because needs vary, in the longer run there are few technical impediments to making those data more universally available. One real world example of this, which is not unique to Nebraska, is address data. Most jurisdictions maintain multiple versions of address data to support various business needs. Given the dynamic nature of individual addresses, the effort to keep them current is a daunting task. All too often, multiple agencies devoted significant resources to managing addresses individually, when that function could be done cooperatively.
- Another kind of efficiency comes in the form automation of tasks. For example, land owner notification becomes a simple process. One anecdote involved a county hiring an abstractor to prepare notification lists. This cost the county about \$2,500 to prepare and mail notifications. With a GIS system preparing that same notice list, meeting the same standards, could be accomplished in roughly fifteen minutes by a clerk who had been trained to use the system.
- In many jurisdictions across the country the plat submittal process has been changed so that not only are plat drawings required for recordation, but so are digital representations in CAD or GIS format. If minimal standards are met, this step often saves counties considerable time and effort in keeping parcel maps up to date. These requirements have provided savings to developers too because the

<sup>17</sup> Hammer and Champ, *Reengineering the Corporation - A Manifesto for Business Revolution*, 1993.

<sup>18</sup> Korte, G., "Weighing GIS Benefits with Financial Analysis," (Joint Nordic Project Report) *GIS World*. July 1996.

inevitable changes that occur during the process from submittal to recordation can be done quickly without having to redraw complete hardcopy maps.

- Automation of parcel and related data has helped many jurisdictions to automate other business functions such as plat review, permitting, and infrastructure asset management.

Effective system planning and implementation can result in real savings in reduced effort and resource needs. Looking across the State, while there is some level of automation, very little of that operational automation relates to GIS, integration, and modernization. As a result, governments in the State of Nebraska, collectively stand to benefit significantly through the automation and modernization processes.

## **b. Effectiveness**

The other economic consideration is effectiveness. The lack of automation and modernization distract agencies from meeting their mandates as staff needlessly spend time on interacting with manual systems, locating, retrieving and dealing with paper or other inaccessible records. Systems, whether manual or automated, need people to maintain them in order to function properly. With a properly designed land information system and related procedures, people spend less time maintaining old inefficient systems and/or manual systems, allowing more time to do necessary work, providing support for decision making and operations, and servicing customer's needs.

One outcome of the automation and modernizations process that has been realized in jurisdictions large and small across the country has been improved data accuracy, currency and completeness. Having better, more complete and timely information can enhance the public decision making process in at least a couple of ways. The first way is in terms of the quality of decisions that may be made by elected officials by having a better “record” upon which to decide. The second way is by reducing the amount of time required to make a decision because information is more accessible. Another significant benefit that will be realized in the future is the surge in effectiveness as systems mature and specific applications are developed.

One specific issue of effectiveness that is a driver for this program initiative is to improve the assessment and taxation processes. The lack of modern, consistent assessment systems across the State complicates the assessment and equalization processes. Certainly the current system, when viewed statewide, is antiquated and therefore ineffective.

## **c. External Benefits**

While a fairly compelling argument can be made to rationalize a public investment in modern, automated land information systems, the benefits will not inure to government alone. Citizens and the private sector stand to gain from improved systems. Improved systems make for a more informed citizenry that are better able to participate in public decision making. From a private perspective, better access to land information will help citizens better manage their real property. This may include better soil and crop management, improved land management, and being in a position to understand and, where appropriate, challenge assessments.

For the private sector, speeding up and improving the plat and permitting processes could result in savings to developers in the range of tens of thousands of dollars on a

single project. In addition, landowners of all forms will benefit from an improved assessment and equalization process.

## 4. Drivers for Modernization

The committee working on the Land Records Study has identified a set of drivers that would support the creation of land information program. These drivers represent an aggregation of the many factors that affect the need for modernization of land information systems. These drivers also provide a context for the proposed program conceptual design.

### a. Status of Automation and Modernization

It is very clear that across the State of Nebraska the current degree of automation is limited. In the aggregate, there is little use of GIS/LIS technologies across local government. Modernization, which involves business process improvement, is even more limited. In particular there is very little intergovernmental cooperation and coordination. While 64% of respondents say they share land information, 78% do not have formal agreements. What this suggests is that the sharing that is going on falls in one or two categories. First data sharing is entirely ad hoc or project based. The second interpretation is that the data is only just part of mandated work-flows that are necessary to satisfy basic business processes. In either case, no business process improvement is occurring, only the minimum data exchange required to meet the business at hand. While that may be rational at the departmental level, it leaves open the opportunity for redundancy and inefficiency.

Examples of possible collaborations include:

- The creation of inter-local agreements between municipalities, counties, regional, state, and federal agencies and the private sector (utilities) for the collective/cost share development of parcel or other spatial or non-spatial information that meets the needs of all participants.
- Creation of data sharing agreements between cities, counties, Natural Districts, Natural Resource Conservation Service, etc. so that agency specific business data may be used by all who may have a need for it, but not the resources to develop it on their own.
- Development of relationships, formal and informal, to provide quality control, ground truthing, and feedback loops to ensure that data is complete, accurate, and useful to a broad audience.

### b. Legal Vulnerability

Given the variability of the quality and consistency of assessment practices and data across the state, there is some potential legal liability regarding the assessment and equalization processes. Improved land information and systems will help blunt that potential liability. Two explicit examples of this kind of liability and the impact of land information systems occurred in the States of Kansas and Indiana. The Kansas experience is particularly instructive here.

A series of challenges to assessments including unreported lower court decisions in the early 1980s highlighted inadequacies within the Kansas system of property assessment. In addition, the state agency responsible for assessment and equalization, the Property Valuation Division, came to recognize the State's vulnerability in meeting its

constitutional mandates because of poor condition of land records and the mechanisms defined by statute. As a result, the Kansas Legislature enacted K.S.A. 79-1476 (1985), which set into motion a statewide reappraisal and classification program<sup>19</sup>. During this reappraisal process, the State worked closely with local governments to develop new property parcel maps according to enhanced state mapping standards. In addition, the reappraisal program prompted the development of a uniform, statewide Computer Aided Mass Appraisal (CAMA) system, which is currently in the process of being updated so as to be compatible with GIS technology.

### c. Homeland Security

The absence of automation and modernization of base governmental information creates vulnerability relative to homeland security. Without good and reliable information systems, the ability to preempt, prevent, and respond to disasters is hampered. It should be stressed that homeland security is not a matter concerned solely with terrorism. Homeland security also affects responding to natural, environmental, and disease outbreaks. For example, the use of GIS and other non-spatial technologies have been used to abate chronic wasting disease in deer populations. Similar threats, such as mad cow disease or other risks to agriculture or transportation, are concerns to Nebraska governments.

### d. Economics

As discussed in greater detail above, given the status of automation and modernization, the approximately \$2 million that is being spent on cadastral maintenance by local governments is likely being done with large inefficiency. The actual amounts spent statewide on land information and related data, technology, and applications are considerably higher than \$2 million. There is, accordingly, significant opportunity to use technology to improve efficiencies and effectiveness.

There is a level of uncertainty of what the final costs of this program might be. Viewed one way, there will be no additional costs because ultimately all of these records will be automated. Perhaps the only real questions are:

- When will data be converted to digital form; and
- Whether or not it will be done in a coordinated fashion so as to maximize the overall benefit.

To be certain, by delaying it is more likely that the costs of digital conversion may be less as technology and conversion methodologies improve. At the same time, there will be costs incurred by delaying, including lost efficiency, lost productivity, and lost opportunity. Part of the lost opportunity will include the chance to build a system that is statewide in scope and that will have utility that is multipurpose and extends beyond the organization that develops the data.

Given the extent of the uncertainties, some costs can be estimated. In particular, the costs of completing a digital parcel fabric for the State may be made.

The Department of Property Tax and Assessment estimates that there are roughly 1,085,897 discreet parcels in the State. This estimate includes both taxable and non-

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<sup>19</sup> This legislative history was provided, in part, by an interview with the former Director of the Property Valuation Division who served during this time, Vic Miller. Other state and officials were also interviewed.

taxable parcels. Based on the results of the *Nebraska Land Records Modernization Survey 2003*, it is estimated that 349,240 parcels, roughly 32% of the parcels in the State have been converted to digital form<sup>20</sup>. It is estimated that another 55,985 are in the process of being converted<sup>21</sup>. That leaves only approximately 680,582 (roughly %63) left to be converted.

The costs for conversion of parcels to digital form range from approximately \$2 per parcel to up to about \$30 per parcel. The cost variance can be attributed to the kind of product produced, the methods of conversion, the status and condition of source documentation, whether parcels are registered to survey control or orthophotography, and other factors. Recent digital parcel conversion project procurements using coordinate geometry compilation methods against survey and orthophoto control have ranged from \$10 to \$12 per parcel. These efforts have included attachment of feature identification numbers and, where available, parcel identification numbers. Appending other related attribute information costs from \$0.50 and \$1.00 per parcel.

Assuming a total of 680,582 parcels to be digitally converted (at \$10 to \$12 per parcel) and attributed (at \$0.50 to \$1 per parcel), the cost of creating a statewide parcel fabric would run from \$7,146,111 and \$8,847,566. These figures, even at the lower end of the range, may be high because much of the parcel mapping for the State may not need to be compiled using coordinate geometry. Agricultural parcels may be drawn using existing orthophotography as a back drop. The cost of that method may be significantly less. Part of the advantage of a state level program will be to assist local governments in making the appropriate choices as to how go about creating digital parcels. Overall costs may be further reduced if the State assists local governments through collaborative, large scale procurements.

## D. A Conceptual Design for a Land Information Program

The following is a proposal for a Land Information System Program for the State of Nebraska presented in the form of a conceptual design. This conceptual design takes into account broad system architectures for business process, data, technology, and organization. Figure 2 below (A Proposal for an Interoperable Land Information System for the State of Nebraska) provides a rolled up conceptual diagram. (Figure 6: Detailed Work Flow and Data Model Diagram which can be found in Appendix A provides a conceptual workflow and a high level data model).

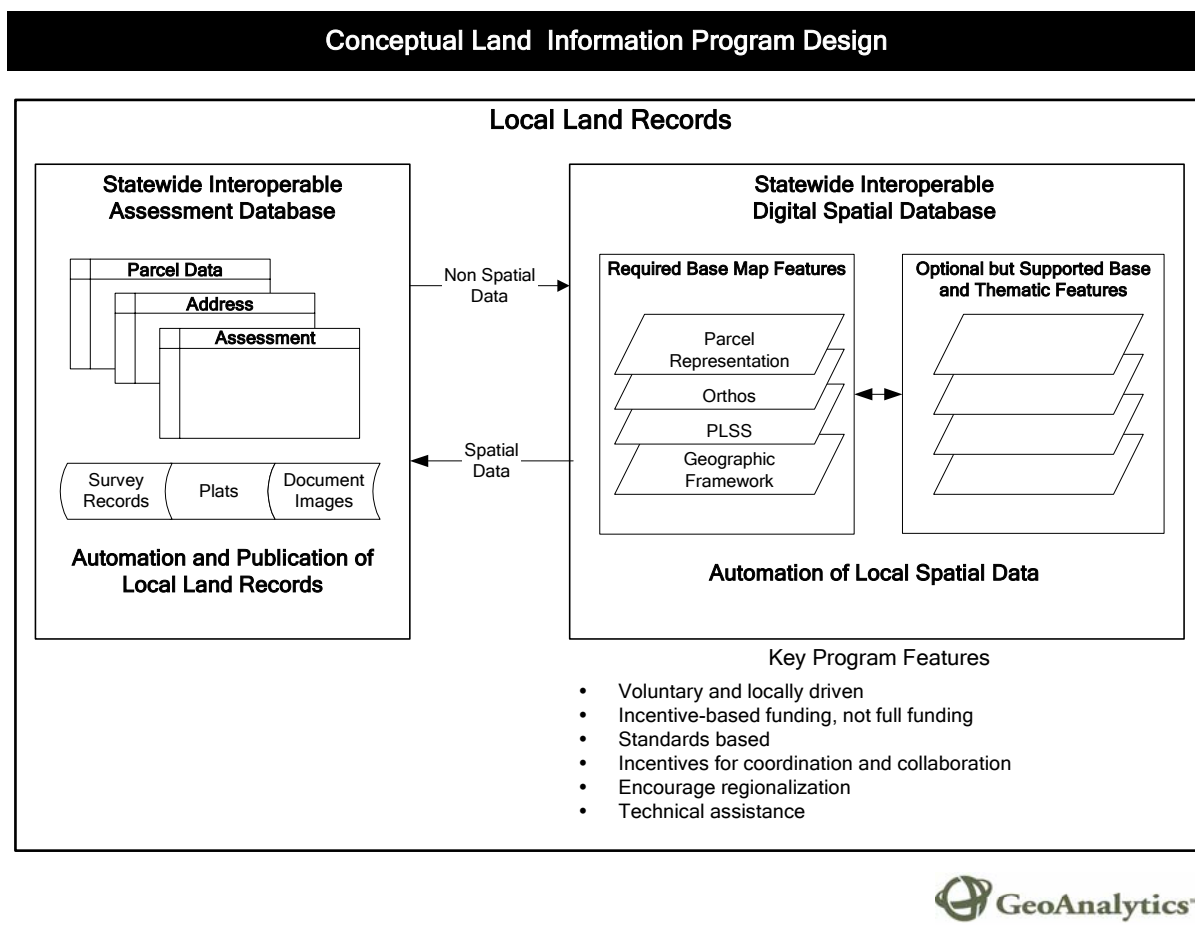
This conceptual design reflects the convergence of two separate initiatives. First is the effort of the Nebraska Geographic Information System Steering Committee for the development of a digital geospatial cadastre (parcels and land ownership). The second initiative is the effort by the Nebraska Department of Property Assessment and Taxation to build a statewide interoperable assessment database and system. Obviously, these two initiatives are closely related in content and, in some respects, interdependent. The successful creation of a geospatial cadastre is very much dependent upon non-spatial data, ownership, address, etc., that would be part of the automation of assessment systems. At the same time, digital spatial parcel information can contribute significantly to the assessment, computer-aided mass appraisal, and the equalization processes. It is prudent, therefore, to merge these efforts to seize on the common administrative

<sup>20</sup> This includes Douglas, Hall, Lancaster, Scotts Bluff, and Sioux Counties.

<sup>21</sup> This includes Dawes, Gage, Hamilton, Jefferson, and Seward Counties.

and operational facets. In addition, by merging these efforts, the resultant consistency, comprehensiveness, extent, and interoperability will extend and enhance potential benefits of both programs.

Figure 2: A Proposal for an Interoperable Land Information System for the State of Nebraska



The following section decomposes the conceptual design into business processes, data, technology, and organization. This design addresses both the technical and policy dimensions of the proposed land information program. By way of caveat, it must be noted that the intent of this design and document is not to address all technical and policy detail. Rather, the purpose of the conceptual design is to describe a broad vision of what the system will be. This necessarily includes a level of technical and policy detail. As the vision for the system and its policy instruments and mechanisms have been vetted by the broader community of stakeholders, who will be affected by the system, and by the governmental policy makers, more detail in the form of logical and physical design can be added.

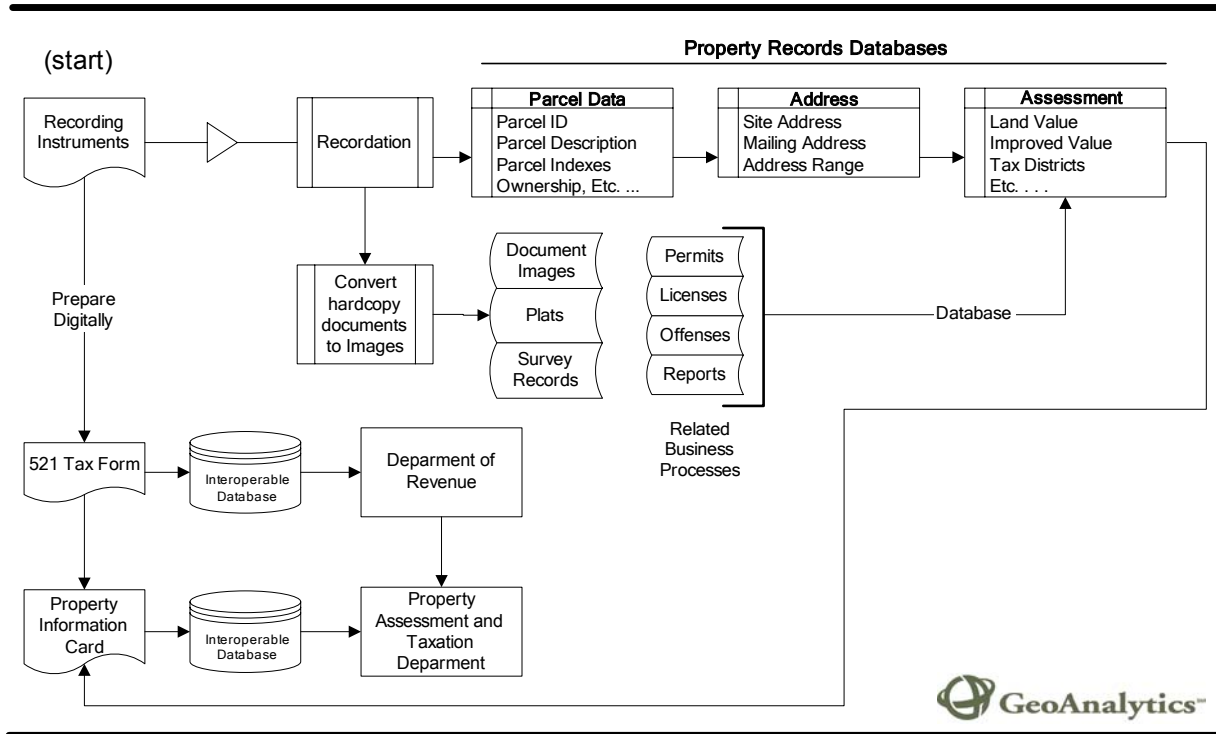
## 1. Process

As proposed, this conceptual design does not involve new or expanded business processes. At a very simple level, what is proposed is to automate and streamline *existing* business



processes. The processes depicted in Figure 3 eliminate a number of steps from the current process. The current workflow involves numerous manual steps and transmittal of paper records. This will end the need to re-key paper records multiple times at the local and state level. In the new system, starting with the recordation process, all data will be digital.

Figure 3: Automation of Non-Spatial Data



By way of example, production and use of the 521 Tax Form involves duplication of paper and automated records in at least three instances: once, when the paper form is created and its contents are entered into local assessment systems; a second time, when the form is transmitted to the Department of Revenue which re-keys basic information as part of the document stamp fee processing; and finally, the entire contents of the 521 Form are re-keyed into the Department of Property Assessment and Taxation's (DPAT) assessment and computer aided mass appraisal system. The current regiment involves similar duplication of effort in the production and maintenance of the Property Information Card.

Virtually every county and most municipalities make use of parcel maps. It is the intent to automate basic parcel graphics statewide. As it stands today, parcel maps are maintained to keep the information current—most often parcel maintenance is undertaken manually in hardcopy form on paper, linen, or vellum. Again, the intent of the land information program is not to create new processes but to automate and modernize existing ones.

The development of the core Statewide Assessment Database System will be the responsibility of the Department of Property Assessment and Taxation. The DPAT will lead this effort as well as to administer funding used to develop this system. It is intended that the Statewide Assessment Database System will be managed in a decentralized fashion

maintaining the existing local responsibilities. The difference will be that (DPAT) will provide the technology and technical assistance to implement the systems locally.

The impetus of the land information program is to automate base and parcel mapping by bringing it into a true GIS format (see section D.2.b, Spatial Data for a more detailed description of what characterizes a true GIS format). GIS based parcel management system will allow integration of “records data” with the parcel spatial information (see Figure 2 above).

Again, these spatial data will be managed in a decentralized fashion with local governments taking the lead in the development of systems. The State will provide technical assistance, standards, and incentive based funding for local governments to adopt these systems. Participation in the Land Information Program relative to GIS is voluntary.

In the event that a particular jurisdiction has completed base and parcel mapping in a GIS format, the program offers optional, but supported, spatial data. These data are discussed more fully in the next section.

## **2. Data**

The first step toward a modern land information system is the development of digital data. It should be noted that this land information system is not intended to be data centric. That is to suggest that the focus will be on creating systems that support business functions and processes, including providing business application access to key, common spatial and non-spatial data. For data to be useful, they must be sufficiently consistent in content, quality, timeliness, completeness, and spatial fidelity to be reliable to support state and local business functions. To that end, both spatial and non-spatial data will be subject to minimum standards to support interoperability and utility across multiple departments, agencies, and jurisdictions.

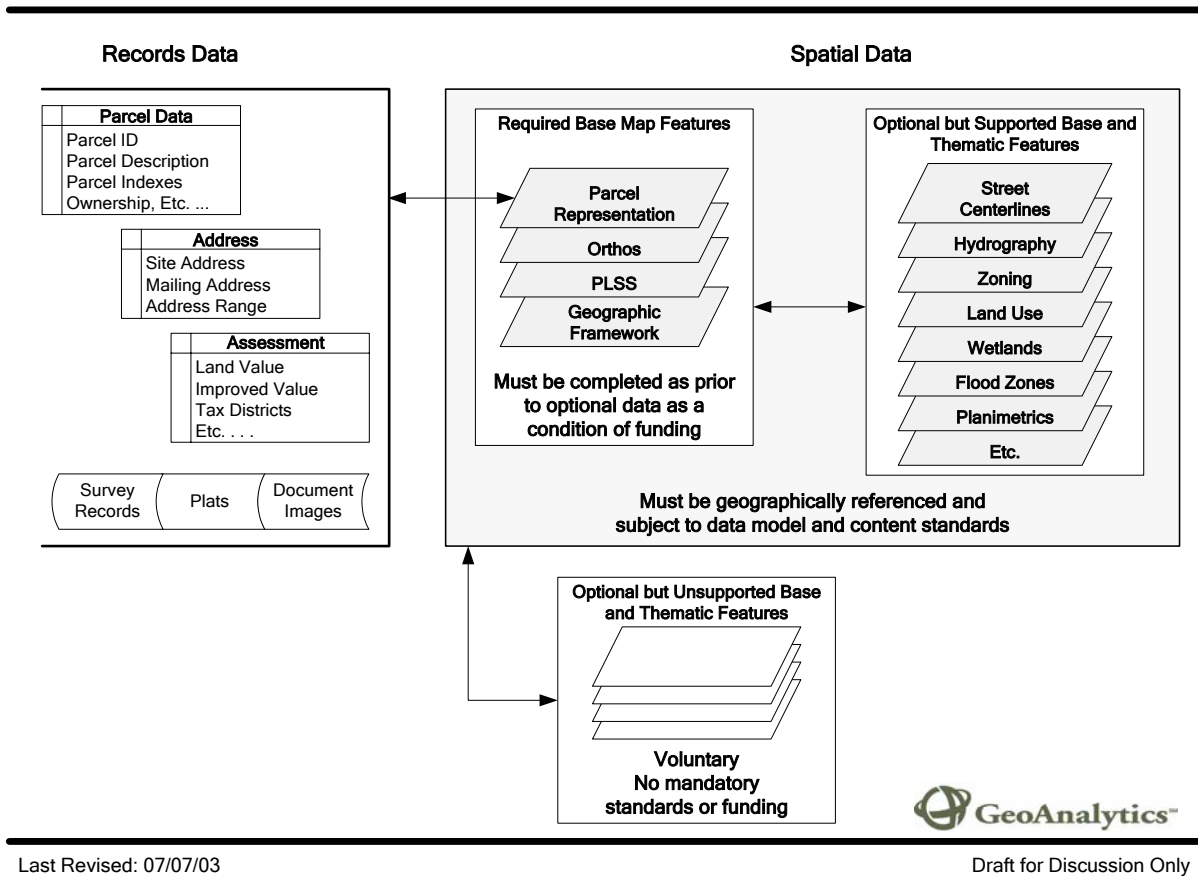
### **a. Non-Spatial Data**

Standards for the development of non-spatial data for the interoperable assessment database will be developed through a nominal process involving producer and user stakeholders along the workflow stream. Because the proposal for this interoperable assessment database system is that it will be developed and primarily funded by the State, data model and content standards to support defined business function and interoperability will be mandatory.

### **b. Spatial Data**

A central component of a land information system for Nebraska is map information, specifically spatial data. Figure 4 provides a high level view of the proposed spatial data model. There are three spatial data elements: required base map features; optional but supported base and thematic features; and optional unsupported base and thematic features. The required and optional but supported categories are eligible for funding.

Figure 4: Conceptual Spatial Data Model



Last Revised: 07/07/03

Draft for Discussion Only

## 1) Geographic Framework

As noted above, the inclusion of the key spatial data for this land information system must be part of a true GIS. There are two central features of a true GIS.

The first is that all data is geographically based, i.e., referenced to real world locations. For data to be useful, all spatial data should be described in such a way as to establish its true position on the surface of the earth within some known degree of confidence. This means that all coordinate values must relate to real world or geographic location and not map location.

Second, key map features must be intelligent. Intelligence connotes two things: linkage to related non-spatial data; and, by way of topology, algorithm, or other data model, is analytical and capable of integration. It is not sufficient, therefore, to simply create digital map products in a computer aided drafting/mapping environment. At a minimum, parcels and street centerlines should be constructed so as to be intelligent. Topological data structures are important for many other features such as some planimetrics, hydrography, etc.

Some parts of a geographic framework are in place in Nebraska. Statewide digital orthophotos exist. While not appropriate for all jurisdictions, this image data is useful for many counties and may serve as a more than adequate base upon which

to build parcel indexes or other data. In addition, there are a variety of sources of survey and geodetic control and Public Land Survey System control.

Figure 4 depicts a set of “required base map features”. It should be noted that these “required base map features” need not necessarily all be built. The key element is that the system must be built on some geographic framework. This framework may be derived from survey control, geodetic control, a high accuracy reference network, the Public Land Survey System, or adequately controlled digital orthophotography. Which of these methods of geographic referencing is used will be determined locally. The mandatory requirement is that supported (funded) spatial data development must be geographically referenced

## **2) Parcel Spatial Data**

It is widely recognized that demographics and landscape across Nebraska call for varying degrees of land information system implementation. The urban populous centers with their fringe development have entirely different system needs than the low population density counties that dot the State. Nevertheless, there are municipal, county, regional, and state needs for spatial parcel information across the State. The needs for parcel data range from simple indexes to full cadastral quality data built on legal instruments creating the parcel. Notwithstanding, whether an index or cadastre, parcel information must be geographically based

Because parcel data must be referenced to real world locations, parcel maps must be built on a geographic framework composed of geodetic or survey control and referenced to the public land survey system.

From a spatial data perspective, the ultimate goal is the development of a statewide parcel based land information system. Therefore, in order to qualify for the funding under the program, the parcel base must be built first.

## **3) Optional but Supported Spatial Data**

Multipurpose land information systems include a variety of physical and cultural data elements. The proposed land information program recognizes those needs and the fact that some jurisdictions have already built a geographic framework and a parcel base. Those organizations will have the option of developing relevant thematic and other base information using program revenues.

To qualify for funding, these optional data must be geographically referenced and meet relevant content and data model standards. These standards will ensure that data may be easily shared and integrated into other systems.

# **3. Technology**

Given that the structure of the proposed Nebraska Land Information System will be comprised of a set of decentralized, independently held databases. These databases will, in all likelihood, reside on a variety of computer hardware and software configurations (as many of those decisions and investments have already been made). Therefore, the overall land information system must be independent of specific technology. Not only will this accommodate existing investments, it will ensure flexibility and scalability over time.

At a strategic level, there is only one mandatory technology requirement. The technology chosen must support interoperability for all supported components. In order to receive funding under this program, meeting interoperability standards will be the responsibility of the custodian, not the potential down-stream users. For non-spatial data, at a minimum, databases must be ODBC compliant. Other interoperability standards and requirements will be developed through a nominal process involving stakeholders along the work and data flow streams.

It is intended that the Nebraska Land Information Program will leverage the statewide data communications network. This network will serve as the backbone for data transfers between local custodians and required state agencies. This communications network may also be used to support data publication and transfer between program participants.

## 4. Organization

The organizational dimension of the land information program presents one of its greatest challenges. The program must be governed, funded, and managed operationally both at the local and state levels. Given the demographics of the State, regionalization of the program is likely indispensable to its success. Many counties and municipalities are simply too small to be able to afford and manage a land information program. For that reason, policy mechanisms must be constructed to provide incentives for intergovernmental collaboration and coordination and regionalization.

### State Best Practices Model

The State of Oregon has some recent experience with implementing a state/local government cooperation model that seeks to develop regional entities to facilitate collaborative land record modernization. As a result of this effort, all counties in the state have joined in some type of regional cooperative entity for land record management. They have established two separate funds (Regional Funding Program Fund and Discretionary Funding Program) that are funded by a \$1 per document recording and filing fee which generates approximately \$200,000 to \$300,000 per quarter. They have also developed a model and a mixed set of criteria for distributing these funds to local governments. This set of criteria seems to have been met with a reasonable level of approval from both urban and rural counties.

### a. Program Governance

Insofar as this land information program is designed to be decentralized to the local level, but aggregated to the state level, there are two discreet forms of governance: statewide and local. The following provides a proposal for both organizational structures.

#### 1) Statewide Governance

Because this program represents the convergence of two separate initiatives (the interoperable statewide assessment database and the creation of a statewide cadastre) governance and administration are complicated. In developing the governance and administrative structures, the following elements should be considered.

#### a) Organizational Considerations

Regardless of the final form of the statewide organizational structure, there two essential elements:

## **(1) Governance Model**

The participants in this proposed program have many and varying interests. There are local interests, state interests, county interests, municipal interests, etc. Even within a particular jurisdiction, there are multiple interests. For example, the recording, property description, and assessment functions, though interdependent, have different business functions and resource needs. Therefore there will be no perfect alignment of what those agencies would like to see in the priorities of the program. Because there are divergent interests that must be aligned for this program to be successful, there is strong need for some form of a governance model.

There are many other functions that a governance model must support, including the following:

- **Sponsorship.** Successful initiatives such as what is being proposed here need sponsorship from individuals and organizations that want to see it succeed. This function is both political and educational.
- **Policy and Strategy Development.** Essential to the success of this program will be the ongoing process of formulating and executing policies and strategies to advance the program. The governance model must foster those efforts.
- **Coordination.** The challenge here is to find ways to promote and sustain common interests, while at the same time grappling with the allocation of limited resources to fulfill all divergent interests.
- **Standards Development.** Standards will be essential to the efficient and effective operation of the program. There are many types of standards that must be supported.
- **Establishment of Priorities.** This program will be faced with resource constraints. It must, therefore, be able to set relevant, attainable priorities on a wide range of issues.
- **Dispute Resolution.** Because the interests of participants, not perfectly aligned, disputes will occur. Dispute resolution will be a key function and will involve policy setting, facilitation, and leadership.
- **Communication and Marketing.** Cultivating and sustaining this program will be an important challenge. Building both decision-maker and participant support will require education about the benefits of the system. Communication and education will also be essential in priority setting and dispute resolution. It is expected that this function will be an ongoing one as the program develops, matures, and evolves

## **(2) Operational Model**

Just as important, there will be a need for operational management. Operational management includes:

- **Program Administration.** This office will also be responsible for Program administration such as budget management, approval of expenditures, Open records and open meetings compliance, staff management and review, etc.
- **Annual Budget Development/Business Planning.** A recurring, but extremely important function for this group will be priority development, budgeting, and business planning. These tasks should be undertaken on an annual basis.
- **Staff Direction and Oversight.** Although the exact nature and scope of State level staffing still needs to be determined, there will be a need for day-to-day management of program staff.
- **System Administration.** To the extent that there are state level resources, they must be managed, including any centralized technology and data assets.
- **Data Custodianship.** Ultimately, there may be data for which the State becomes the primary data custodian. Operationally, these functions must be addressed. Custodial responsibilities include: Data maintenance; Data documentation or metadata; Data access; and Data distribution.
- **Project Management.** A key responsibility will be project management for all State led initiatives. This will be particularly important if the State provides direct assistance to local governments. How effectively projects are managed will have a tremendous impact on the success of the program overall.

#### **b) Administration**

The development and maintenance of a statewide interoperable land record information system will require the designation of a clear administrative home for this intergovernmental program initiative. This administration would be ultimately accountable for the success or failure of the operational management functions outlined above, and as such, would need the clear authority and necessary program resources. These operational program functions would likely include: program administration, budget and business planning, staff oversight, system administration, data custodianship, and overall project management.

In addition to the operational program management functions, this administrative home must also coordinate and work closely with the governance and/or policy aspect of developing and maintaining an interoperable land information system.

The wide range of interrelated policy considerations involved in designating an administrative home for this program will require further discussions and consideration by Nebraska policy makers.

#### **c) Policy**

There are numerous policy issues that would need to be addressed in any initiative to develop a statewide interoperable land information system: standards, priorities, coordination, collaboration, etc. The Nebraska GIS

Steering Committee (NGSC), with its access to GIS technical expertise and its state and local government representation, is well suited to play a major role in fulfilling many of these policy functions. At the same time, this is an information technology initiative that will involve grants-in-aid to counties and, possibly, other local and regional agencies. The Nebraska Information Technology Commission (NITC) has a track record of providing grant funding and coordination across state and local agencies. The NITC maintains councils for state government, education, and communities. It also maintains a technical panel. It is proposed that the NGSC be recast and brought within NITC as another council and that the NITC and the NGSC jointly provide the policy guidance for any statewide land information system.

**d) Grants in Aid**

The NGSC would provide advice and support to NITC relative to GIS technology. In turn, NITC would administer grants to support local and regional GIS and data development.

**e) Staffing**

It is expected that at least one new staff will be have to added to support the land information program. The GIS Steering Committee Coordinator position should continue. New staff will be devoted technical assistance and data integration.

**f) Technical Assistance**

A major need identified is technical assistance. For the program to be successful, local agencies and staff will be have to be educated and trained on the new technologies and procedures. Because of the distributed and decentralized nature of the spatial data part of the program, the need for technical assistance will be more profound. Technical assistance will be accomplished in three ways:

- Program staff will be charged with providing technical assistance. This technical assistance will focus on education, outreach, and best practices development.
- Part of the work of staff will be to facilitate the development of a statewide procurement that will qualify competent professional services firms to provide assistance to program participants. Qualifications screening will cover a range of professional services categories ranging from system design, data conversion, to system implementation.
- The key underpinning of technical assistance will the development of flexible, but robust standards that will ensure sufficiently quality products and technical interoperability. Standards will be enforced via incentives, namely qualification for funding.

Whatever form of technical assistance is provided, it will be important that participants are involved and engaged in advancing their skills.

**2) Local Governance**

For the program to be successful there will be a need for minimum standards relative to how the program is managed and governed locally. At the same time,



the local units of government need to be provided maximum flexibility to develop their own programs and institutional arrangements to meet their own specific needs. Again, because of the range of demographic circumstances, what would be appropriate in a more populous county may not be in a smaller rural county. In addition, it is the intent of this program to foster intergovernmental relations to maximally leverage public investments. As a result, flexibility is important. There will be three key requirements for local governance:

- First, there must be a single point of contact on a county and/or regional basis.
- Second, whatever organizational structure that is adopted must have local government governing body sanction.
- Third, the structure must encourage inter-departmental and inter-governmental coordination and cooperation.

## b. Program Funding Considerations

There are at least two possible funding sources and/or mechanisms that are directly related to changes in land records and, therefore, have a user fee dimension. When real property is transferred and related documents are filed, it is necessary to modify land records and maps. As such, increases in the current Document Stamp Tax and/or the Recording Fees could provide a logically connected revenue source to help cover the costs associated with updating and modernizing these land record databases and maps.

Revenue is currently being generated from both of these sources and allocated to a range of existing public purposes. To support the development of a statewide land information system, it would not be practical to reallocate that existing funding, but rather the more realistic approach would be to seek a modest increase in both of these taxes and fees in order to generate the additional revenue needed to help support the public costs associated with modernizing and maintaining land record systems.

The ultimate design specifics of any statewide land information program would determine where and how any increased funding should best be allocated. Most of the land record modernization and maintenance work will occur either directly at the local government level, or on behalf of local governments. It is therefore important, that the bulk of any revenue increases either stay at the local government level or they are allocated in a manner to directly support local government land record modernization efforts.

### State Best Practices Model

The State of Wisconsin has one of the longest running and most proactive statewide land information programs in the nation. The Wisconsin Land Information Program has a long track record of combining funding for local government land information programs, with state oversight and coordination, standards, and requirements for local coordination and planning. The Wisconsin program is funded largely by an earmarked recordation fee that is distributed via grants-in-aid to local governments. Over the years, Wisconsin has used a variety of criteria to distribute these grants-in-aid funds. Much can be learned from Wisconsin's considerable experience with a variety of policy and administrative structures related to statewide land information systems. Wisconsin has also looked closely at the overall costs of maintaining land records and the costs of land record modernization.

However, it is also true that if there is to be an interoperable statewide land information system in Nebraska, then additional resources will also be required at the state level. These resources would be needed to provide technical support to local governments; data integration and distribution; targeted grants-in-aid to local governments; and administration. The final nature of any fee and/or tax increases and their allocation must be shaped to support the program specifics of any land information system initiative. One possible scenario for addressing this mix of local and state government revenue needs and the need for statewide system coordination and integration is offered below.

### **1) Document Stamp Tax Increase**

The current documentary stamp tax is assessed on transfers of real property. The tax rate is \$1.75/\$1,000. A \$.50 increase in the rate of this tax would result in new revenues in excess of \$2 million. If this funding mechanism is used, it could be allocated among the following:

- Salaries for state program related staff
- Program administrative and overhead expenses
- The development of the interoperable statewide assessment database
- A portion for grants-in-aid for local governments
- Depending on the circumstances a portion of the document stamp may be retained by local government for program support. Any such retained revenue would be earmarked for the land information program. Qualification for retaining revenue will include meeting relevant technical and program standards.

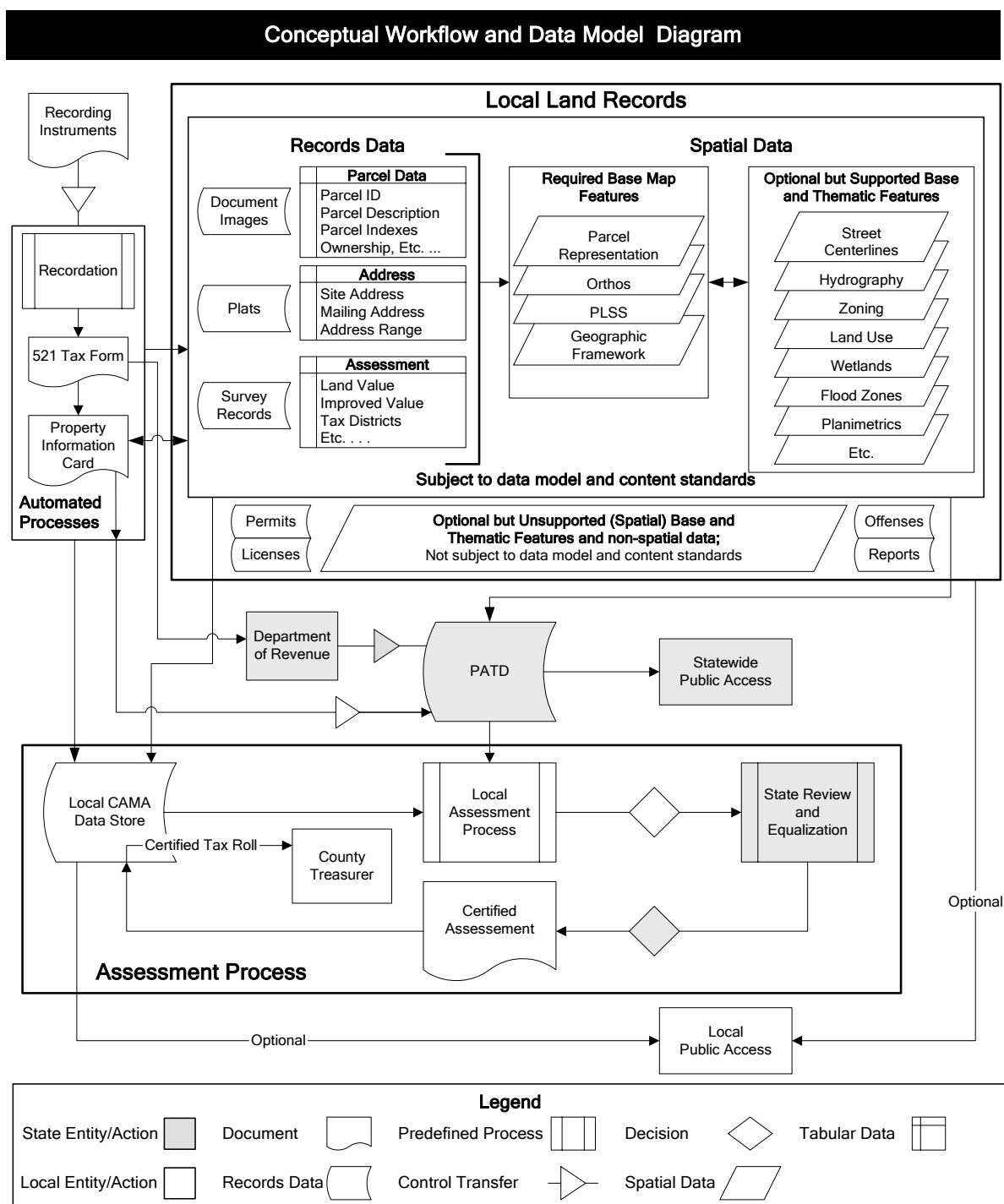
### **2) Recording Fees**

In addition to the document stamp tax, it is proposed that document recording fees collected by county register deeds be increased. Currently those fees are \$5 per page. If recording fees were increased, it is expected that a majority of the fee increase be retained by county government, or their regional groupings, to support its land information program and to support the register of deeds office. A minority portion of those fees could be submitted to the State to support statewide land information efforts.

The recording fee increase could take two forms. One form would be a statutory fixed amount. The second form would be to permit counties to optionally increase fees an additional amount at their own discretion. Again, these fees would be earmarked for the land information program.

## Appendix A: Detailed Program Model

Figure 6: Detailed Work Flow and Data Model Diagram



## Appendix B: Summary Local Government Survey Results

Nebraska Land Records Modernization Survey 2003 - County Respondents			
Adams County	Dixon County	Johnson County	Platte County
Antelope County	Dodge County	Kearney County	Polk County
Arthur County	Douglas County	Keith County	Red Willow County
Banner County	Dundy County	Keya Paha County	Richardson County
Blaine County	Fillmore County	Kimball County	Rock County
Boone County	Franklin County	Knox County	Saline County
Box Butte County	Frontier County	Lancaster County	Sarpy County
Boyd County	Furnas County	Logan County	Saunders County
Buffalo County	Gage County	Loup County	Scottsbluff County
Burt County	Garden County	Madison County	Seward County
Butler County	Garfield County	McPherson County	Seward County
Cass County	Gosper County	Merrick County	Sherman County
Cedar County	Grant County	Merrick County	Sioux County
Cherry County	Greeley County	Morrill County	Stanton County
Cheyenne County	Hall County	Nance County	Thayer County
Clay County	Hamilton County	Nebraska City <sup>22</sup>	Thomas County
Colfax County	Harlan County	Nehaha County	Thurston County
Cuming County	Hayes County	Nuckolls County	Valley County
Custer County	Hitchcock County	Otoe County	Washington County
Dakota County	Holt County	Pawnee County	Wayne County
Dawes County	Hooker County	Perkins County	Webster County
Dawson County	Howard County	Phelps County	Wheeler County
Deuel County	Jefferson County	Pierce County	York County

Nebraska Land Records Modernization Survey 2003 - City Respondents					
Alliance	Chappell	Grand Island	Lexington	Omaha	Scottsbluff
Beatrice	Columbus	Hastings	Lincoln	Papillion	Seward
Bellevue	Crete	Holdrege	McCook	Plattsmouth	Sidney
Blair	Elkhorn	Kearney	Norfolk	Ralston	South Sioux
Chadron	Gering	LaVista	Ogallala	Schuyler	Wayne
					York

<sup>22</sup> The response of the City of Nebraska City has been included in the County results because it provided a collective response with Otoe County

## Nebraska Land Records Modernization Survey 2003 Results by County

### Contact Information

### Organizational / Institutional Issues

#### Land Records Management Jurisdiction

1. Which category best identifies your organization's jurisdiction or service area? (Please check only one.)

Answer	Respondents
County	88
Other	1

2. For which geographic area(s) do you manage land records information/ data? (Please check only one.)

Answer	Respondents
County and all municipalities	47
County and some municipalities	2
County only	39
Other	1

3. Approximately how many full-time equivalent (FTE) employees are involved in responding to requests for parcel specific information (e.g., ownership, assessed value) on an annual basis?

Answer	Respondents
FTE	62
Don't Know	17

Tier	Mean FTE	Std Dev	Min	Max
All Counties	1.54	1.43	0.05	6
Tier 1	1.69	2.25	0.25	6
Tier 2	1.63	1.36	0.15	4
Tier 3	1.57	1.39	0.05	5.5

4. Does your office use any of the following means to provide public access to parcel specific information (e.g., ownership, assessed value) and/or parcel maps?

Answer	Respondents
Paper copies of existing records or maps	87
Tier 1	9
Tier 2	18
Tier 3	60
Computer files of existing records/maps	31
Tier 1	6
Tier 2	6
Tier 3	19

5. Can parcel specific information (e.g., ownership, assessed value) and/or parcel maps be accessed remotely from outside your office? (Please check only one.)

Answer	Respondents
In-Office Access Only	77
Tier 1	3
Tier 2	17
Tier 3	57
In-Office and Remote Computer Access	6
Tier 1	4
Tier 2	0
Tier 3	2
Other	6
Tier 1	2
Tier 2	1
Tier 3	3

6. Does your organization place any of the following restrictions on public access to parcel specific information and/or parcel maps? (Please check all that apply.)

Answer	Respondents
Copyright	5
License Agreement	2
Restrictions on redistribution of data	4
Charge for the cost of reproduction	68
Charge fee in addition to the cost of reproduction	9
Other	9



7. In your experience, which of the following incentives would you find most helpful in creating, updating, integrating and distributing land records information and data?

Answer	Respondents
One-Time Financial Support (grants, low interest loans, etc.)	45
Policy (executive order, legislative mandate, standards)	18
Educational (workshops, literature, guidebooks, on-line help, etc.)	30
Ongoing Partnerships (cost-sharing, work sharing, etc.)	32
Technical Assistance	33

8. Does your organization share its land records information/maps with other organizations?

Answer	Respondents
Yes	52
No	28
We have plans for the future.	8

9. Does your organization maintain intergovernmental agreements with other organizations for the distribution and sharing of land records information/maps?

Answer	Respondents
Yes	8
No	71
In progress	4

10. Is there a need for better coordination, joint programs, etc. between state agencies and local governments in regards to land records creation and maintenance?

Answer	Respondents
Yes	66
No	14

## Information Technology

11. Do you have access to a PC in your office?

Answer	Respondents
Yes	86
No	1

If “No”, please skip to IV. Cadastral Information

12. If you answered # 11 as “yes”, which computer operating system(s) do you use?

Answer	Respondents
Windows	86
Unix/Linux	3
Other	4

13. Is your computer connected to other computers in the office or other computer systems?  
Please indicate all that apply:

Answer	Respondents
Don't Know	4
Local Area Network (LAN)	40
State's AS/400 System	34
Other (e.g., Secretary of State, TerraScan)	29

14. If you use a computer system for land records, please indicate what the types of computer applications you use for land record management.

Answer	Respondents
Don't Know	2
Administrative package for Assessors	56
CAMA	48
GIS	17
Grantee/Grantor Indexes	13
Other (e.g., MIPS, Northeast Data, etc.)	21

15. If you use computer applications for land record management, are those computer applications locally developed and supported or are they developed and supported by an outside vendor?

Answer	Respondents
Don't Know	1
ASI - TerraScan	41
Northeast Data	8
MIPS - County Solutions	31
Local/In-house Support	8
Other	12

16. What is the underlying relational database management system (RDBMS) software that is used for land your records?

Answer	Respondents
Don't Know	52
dBase	1
DB2	1
FoxPro	7
INFO	2
Informix	0
INGRES	0
MS Access	6
MS SQL Server	3
Oracle	2
Sybase	0
Other	6

17. Do you have access to the Internet?

Answer	Respondents
Yes	79
No	6

18. If “yes”, please describe your Internet connection:

Answer	Respondents
Don't Know	13
Dial-up	21
ISDN	1
Satellite	3
Cable Modem	4
DSL	18
T1, T3	7
AS/400 Network	9

## Cadastral Information

### Cadastral Maps

19. Does your organization (either on paper or computer) create, update, integrate or distribute cadastral maps (i.e., information/data that describes parcels; for example, property corners, boundaries, and parcels of land)?

Answer	Respondents
Yes	71
No	14

If “No”, please skip to Section V. Street Addressing.

20. What is the approximate number of parcels in your jurisdiction?

	Total	Mean	Std Dev	Min	Max
Parcels	~798,124	11,241	24,454	1,200	190,000

21. Who originally created your current or existing cadastral maps (either on paper or computer)?

Answer	Respondents
Created “in-house” by our staff	18
Created by an outside vendor	55

For the purposes of the following questions, *ongoing cadastral map maintenance* means updating parcel maps such as making parcel splits, combinations, adding subdivision plats, etc., on some regular basis (daily, weekly, monthly, annually). A *major cadastral map revision* means the creation of new maps or replacement of maps on some irregular or multi-year basis..

## Ongoing Cadastral Map Maintenance/Updates

22. How often does your organization edit/update its cadastral maps as part of ongoing maintenance?

Answer	Respondents
Daily	28
Weekly	22
Monthly	15
Semi-Annually	3
Annually	3
Longer than annually	2

23. Who maintains/updates your organization's cadastral maps?

Answer	Respondents
Maintained/updated "in-house" by our staff	73
Maintained/updated by an outside vendor	1

24. If your organization's cadastral maps are regularly maintained/updated "in-house", approximately how many full-time equivalent (FTE) employees are involved on an annual basis?

Answer	Respondents
FTE	56
Don't Know	12

	Mean FTE	Std Dev	Min	Max
Counties	0.91	0.89	0	3

25. Please provide an estimated annual cost for ongoing maintenance and updates of your organization's cadastral maps:

Answer	Respondents
Less than \$5,000	33
\$5,000 - \$19,999	21
\$20,000 - \$39,999	10
\$40,000 - \$59,999	1
\$60,000 - \$79,999	0
\$80,000 - \$99,999	1
\$100,000 - \$119,999	0
\$120,000 - \$139,999	0
\$140,000 - \$159,999	1
\$160,000 - \$179,999	0
\$180,000 - \$199,999	1
\$200,000 - \$299,999	0
\$300,000 - \$399,999	0
\$400,000 - \$499,999	0
Greater than \$500,000	0

26. What are the source(s) of funding that support ongoing cadastral map maintenance/updates?

Answer	Respondents
General Fund / Regular Budget Allocation	68
Grants	0
Real Estate Transfer Fee	0
Sinking Funds	1
Other (e.g., Appraiser's funds, Assessor's budget, inheritance, salary)	5

27. Does your organization collaborate with other organizations to develop or maintain cadastral maps?

Answer	Respondents
Yes	7
No	66

28. If you answered # 27 with a “yes”, with which organizations?

- FSA Maps
- FSA Office
- Omaha City Planning helps maintain the Lot Layer and Douglas County Surveyor is currently GPSing all PLSS Section corners in the County for the PLSS Layer
- PAT/other Assessors
- Register of Deeds
- We coordinate with County Engineering, City Planning Department and City Public Works Department in a process to fit to GPS control and legal landbase layers.

## Major Cadastral Map Revisions

29. Does your organization conduct major revisions of its cadastral maps on some irregular or multi-year basis?

Answer	Respondents
Yes	10
No, major revisions are not necessary due to continuous maintenance/updates of cadastral maps.	60

If “No”, please skip to D. Computerized Format

30. How often does your organization conduct a major revision of its cadastral maps?

Answer	Respondents
1-3 years	1
3-6 years	0
6-9 years	3
≥ 10 years	25

31. Approximately when was the last major revision of your organization’s cadastral maps?

Answer	Respondents
Year	29
Don’t Know	5

	Mean	Std Dev	Min	Max
Year	1981	17.54 years	1940	2003

32. When is the next major revision of your organization's cadastral maps most likely to occur?

Answer	Respondents	Percentage
Year	10	
Don't Know	24	

	Mean	Std Dev	Min	Max
Year	2005	4.4 years	2002	2014

33. Who generally conducts the major revision of your organization's cadastral maps?

Answer	Respondents
Revised in-house by our staff	10
Revised by outside vendor	9
Combination of the two	9

Comments:

- Put out to bid.
- 1979 Stewart & Smith
- 1989 maps done by Sall Engineering.
- Henningson, Durham and Richardson, Inc.
- In the past an outside vendor has done the work; now we intend on using the GIS System to keep maps current.
- The Vendor took the books apart, laminated each sheet and hung them.

34. If major revisions of your organization's cadastral maps are conducted "in-house", approximately how many full-time equivalent (FTE) employees are involved in the process?

Answer	Respondents
FTE	8
Don't Know	17

	Mean FTE	Std Dev	Min	Max
Counties	1.22	0.70	0.25	2



35. Please provide an estimated cost for major revisions of your organization's cadastral maps, in addition to staff time (estimated annual costs may include the FTE costs outline above).

Answer	Respondents
Less than \$5,000	7
\$5,000 - \$19,999	3
\$20,000 - \$39,999	1
\$40,000 - \$59,999	1
\$60,000 - \$79,999	3
\$80,000 - \$99,999	0
\$100,000 - \$119,999	0
\$120,000 - \$139,999	3
\$140,000 - \$159,999	0
\$160,000 - \$179,999	0
\$180,000 - \$199,999	0
\$200,000 - \$299,999	2
\$300,000 - \$399,999	0
\$400,000 - \$499,999	0
Greater than \$500,000	0

36. What are the source(s) of funding that support major revisions to parcel mapping?

Answer	Respondents
General Fund / Regular Budget Allocation	23
Grants	0
Real Estate Transfer Fee	0
Sinking Funds	0
Other	7

Comments for "Other":

- Appraiser Fund
- Assessor's budget over several years as allowed.
- Inheritance Tax Funds were used for both the original maps and those done in 1989.
- No funding available
- State funded
- Tax dollars

## Computerized Format

37. Has your organization created or acquired computerized parcel mapping?

Answer	Respondents
Yes	13
No, but our organization has plans for computerized parcel mapping.	19
No, there are no plans for computerized parcel mapping at this time.	34

If “No”, please skip to Section V. Street Addressing.

38. If “Yes”, what is the status of your electronic parcel maps?

Answer	Respondents
In Progress	11
Completed	1
Parcel map is current to (date)	4
Other	3

Comments for “Parcel map is current to (date)” and “Other”:

- Just getting started
- One of the goals of the new assessor is to establish a computerized parcel mapping system.
- On-going edits keep it current
- Parcel maps are kept as current as can be expected with a county of this size
- We began our current Cadastral mapping in 1989.

39. Computerized parcel mapping was:

Answer	Respondents
Conducted in-house	1
Conducted by outside vendor	6
Combination of the two	10

40. What general methods were used to create your organization's computerized parcel maps? (Please check all that apply.)

Answer	Respondents
Developed parcel boundary lines by digitizing/scanning existing paper/mylar/linen maps	11
Created computerized parcel boundary lines using coordinate geometry (COGO) from property descriptions	6
Digitized existing maps using aerial photography/orthophotos to adjust the boundaries	12
Incorporated computerized data (e.g. certified survey maps) from an outside source.	3
GPS (global positioning satellite)	3
Other	0
Don't Know	4

41. Computerized parcel maps for your organization are now maintained:

Answer	Respondents
Maintained in-house	13
Maintained by outside vendor	0
Combination of the two	4

42. Are your computerized parcel maps "registered"? *Registered* computerized parcels maps are built using real world coordinates so that locational coordinates for parcel corners (latitude/longitude or State Plane Coordinates, etc.) can be derived from the drawings or electronic maps.

Answer	Respondents
Yes	4
No	4
Don't Know	10

43. Are computerized parcels coded with unique parcel identification numbers?

Answer	Respondents
Yes	19
No	1
Don't Know	2

44. Can an automated linkage be made between computerized parcel mapping and tax roll/assessment databases? (e.g., to support thematic mapping of attributes such as assessed value, assessment class, and ownership)

Answer	Respondents
Yes, such a linkage is simple	8
Yes, but on a project-by-project basis with some additional manipulation of computerized parcel mapping and/or the tax roll/assessment database	3
No	3
Don't Know	5

45. Does your organization maintain any documentation about how your computerized parcel maps were created or maintained (Some examples might include, but are not limited to, metadata, data dictionaries, data catalogs, data libraries, etc.)?

Answer	Respondents
Yes	6
No	5
Don't Know	7

46. Please indicate which information your organization works with, and its role(s) relative to that information, by placing an "X" inside each applicable box. Please check all that apply.

	Map/ Data User	Map/ Data Creator	Map/ Data Distributor	Update Maps/ Data	Does this map/data have access/redistribution restrictions?	
					Yes	No
Parcel Ownership	19	15	14	18	2	7
Parcel Taxation	15	14	10	8	0	0
Parcel Use	19	15	14	18	2	7
Right of Way Information	0	0	0	0	0	0
Publicly Owned Lands	0	0	0	0	0	0
Non-Taxable Lands (e.g., churches, recreation centers, etc.)	0	0	0	0	0	0
Road Centerlines	2	0	0	2	0	0
Easements	3	1	1	2	0	1

## Street Addressing

47. What addressing system(s) are used by your jurisdiction?

Answer	Respondents
Street Addresses	75
Rural Routes	28
Fire Numbers	14
Lake Lots	6
Other	35

Comments for "Other":

- Government survey legal descriptions
- Township Section Range for parcel maps and info
- Parcel numbers
- PO Box numbers
- 911 and E-911 Addressing System -- Fire numbers & subdivisions in rural areas
- 911 Addresses -- house number and road number
- 911 Addressing System -- Zoning Administrator handles this
- Rural addresses are 911 services addresses. County is 24 miles square, grid runs from 1 to 25 for north-south roads, A thru Y for east-west roads.
- HC Highway Contract

48. How does your jurisdiction maintain address information: (Check all that apply)

Type	Paper	Computerized
Master Street Address Guide (MSAG)	20	29
Emergency services (911 or E911 systems)	28	39
Individual department databases	14	27
Tax/Billing system	20	47
Other	2	0

49. If your jurisdiction maintains street centerline files, are address ranges associated with the centerlines?

Answer	Respondents
Yes	7
No	26
Don't Know	32

50. If “yes”, is that information maintained in a computer database?

Answer	Respondents
Yes	6
No	3
Don't Know	5

## Geographic Information Systems (GIS)

51. Does your organization use geographic information systems (GIS) or computer aided design (CAD) technology to create and manage land records information?

Answer	Respondents
Yes, we use CAD	1
Yes, we use GIS	12
Both GIS and CAD	5
Neither	62
Don't Know	1

52. If you answered # 51 as “neither”, is your organization currently considering using GIS/CAD technology in the future?

Answer	Respondents
Yes	29
No	18
Don't Know	15

If you answered # 51 as “neither” or “don't know”, please skip to Section VII. Public Land Survey System.

53. Is your organization's GIS/CAD data created and maintained:

Answer	Respondents
Created/Maintained in-house	11
Created/Maintained by an outside vendor on an ongoing basis	1
Created/Maintained by an outside vendor on an occasional basis	2
Both by in-house and by outside vendor	11

Comments:

- GIS Workshop is helping us build our GIS
- GISWorkshop is creating the system and we will update it daily.
- We have just awarded a bid to GIS Workshop for cadastral and Assessor use.
- In house and through NE Data Systems
- Preliminary GIS use is GPS all section and quarter quarter points w/surveyor's help to tie to parcel ID# in CAMA
- We have some ESRI software and have done some work with survey corners. Work is proceeding slowly as it is only done when time permits and no one has much training with the programs.
- They are creating and all maintaining will be in house

54. Which GIS/CAD software do you use?

Answer	Respondents
Autodesk (e.g., AutoCAD, AutoCAD Map)	5
ESRI (e.g., ArcInfo, ArcGIS, ArcView, ArcIMS, ArcSDE)	18
Bentley Systems (e.g., Microstation)	0
Intergraph (e.g., MGE, GeoMedia, GeoMedia Professional, FRAMME)	0
Genasys II (e.g., GenaMap)	0
GDS	0
MapInfo	1
Smallworld	0
Other (e.g., AGIS)	2

55. Are your GIS/CAD functions:

Answer	Respondents
Centrally administered with multiple departmental users	3
Multiple systems split among different departments	4
Single departmental user only	12

56. For what applications do you use GIS/CAD?

Answer	Respondents
Allocating Services	1
Assessment	13
Infrastructure Management	2
Land Use Planning	4
Natural Resource Protection	1
Parcel Mapping	14
Public Safety	2
Vehicle Routing	2
Site Selection	4
Water Resource Planning	2
Other	4

Comments for "Other":

- Currently not using for anything but plans are to use for assessment, public safety, parcel mapping, management, etc.
- Only used for surveying purposes (corner est. data, surveying lot and tract)
- Since we currently do not have it but have just awarded a bid for it, use is not defined other than starting in the assessor's office for parcel mapping.
- We are just getting started with GIS.

57. Approximately how many full-time equivalent (FTE) employees in your office are involved in GIS data development and maintenance on an annual basis? (The number of FTEs may include those involved with parcel maintenance and major map revision.)

Answer	Respondents
FTE	17
Don't Know	5

	Mean FTE	Std Dev	Min	Max
Counties	1.02	1.01	0	2.5



58. Please estimate the amount your organization spends annually on creating, updating, integrating, and/or distributing GIS data? (This estimate may overlap expenditures for cadastral mapping).

Answer	Respondents
Less than \$5,000	5
\$5,000 - \$19,999	3
\$20,000 - \$39,999	5
\$40,000 - \$59,999	3
\$60,000 - \$79,999	0
\$80,000 - \$99,999	0
\$100,000 - \$119,999	0
\$120,000 - \$139,999	1
\$140,000 - \$159,999	2
\$160,000 - \$179,999	0
\$180,000 - \$199,999	1
\$200,000 - \$299,999	0
\$300,000 - \$399,999	0
\$400,000 - \$499,999	0
Greater than \$500,000	0

59. What are the major limitations faced by your office in accessing or processing maps and information tied to street addresses that might be eased or eliminated by GIS? (Please attach additional sheets if necessary.)

- 911 address file is on paper. Computerized data is on the tax files and voter registration files.
- Computerization would eliminate some of the double-work. We could enter the information once in the computer, rather than working it by hand (on the maps), then on paper, then in the computer.
- Currently we have to go to a paper copy for an address listing which is time consuming. We do not take our cadastrals apart for copies. They have to get copies from the Co. Clerk's Office, which are not updated with splits.
- Don't know.
- Field data collectors could speed up the process.
- Haven't gotten that far into GIS yet
- Having a computerized map of the county which allows us to "point and click" to find parcels has already been a tremendous help to us when we have a customer who needs information but has little to help us find the parcel.
- If everyone in all County and City departments had their data in a relational dbf and posted on the network where people who had permission are able to access and download the information
- If this office had the money, they would love GIS!
- Just being able to determine neighborhoods as well as use by indexing will be a tremendous help
- Lack of funds and positions governed by county budget set and approved.

- Money!!!!
- Right now we use a paper card file for residential properties. Once we have our GIS completed and connected to the 911 data ase we should not have any major limitations.
- Sioux Co. operates on a very limited budget
- Street addresses are not always available, but will most likely become so with the implementation of a 911 system.
- updating maps
- zeroing in on specific areas (lots, blocks,parcels, etc)

60. What business needs might be addressed with GIS? (Please attach additional sheets if necessary.)

- Agland Maps, simplify splits, accuracy of splits, multiple layering of maps could be very useful for Equal., Weed Supt. & FSA Office.
- Better and more equal valuation of properties as well as more accurate size and area of parcels.
- E911 addressing, parcel splits, soil mappings, etc.
- E-Commerce could be developed where large chunks of information and data might be put on a web site for a subscription fee
- economic development, agriculture, real estate development, emergency response
- farm and ranch managers could access GIS records.
- For the Assessor, mapping; for the Register of Deeds, linking deeds records to ownership/assessment. For location by fire department, law enforcement, road supervisor, surveyors, etc..
- GIS is a long term goal, but limited by funding. When we have real estate transfers (e.g., splits), it's hard to determine values as can't divide it accurately. GIS would help this.
- GIS would provide better access to our customers, as they could access the information from any computer outside the office, rather than having to come to the office.
- Higher efficiency levels in determining levels of value, redrawing voting district lines and school district lines, etc..., will be much easier for the clerk's office. Too numerous to really name everything that will be aided with a functional GIS.
- real estate agents & appraisers
- Work flow processes could be better organized by using GIS
- Would be helpful for determining land use.

## Public Land Survey System (OPTIONAL)

61. Does your organization have an active program to maintain the Public Land Survey System (PLSS) section corners?

Answer	Respondents
Yes	16
No	40
Don't Know	21

62. How many PLSS section / quarter section corners have been recovered and remonumented? (Please check all that apply.)

Answer	Respondents
Number of PLSS corners that have been remonumented	9
Total number of PLSS corners	6
Don't Know	32

Comments:

- Duty of County Surveyor- Don't Know
- 50% have been remonumented, 50% have been remonumented
- The Douglas County Surveyor is in the process of doing this task now, they probably have 100 square miles out of 300 completed
- Don't know actual number, but they are continually remonumented as found by county surveyor
- Estimate 10%, as surveys are requested. County is 24 x 24, with a few roads on half mile lines.
- Remonumentation is done on an as needed basis. I have an ongoing effort to GPS corners but no specific number per year is attempted. Scotts Bluff County is approximately 750 sq miles in size.
- 10 annually, 2500
- 2,000, 10,000
- 2000 plus or minus, 2760
- 3000, 5000
- We recovered all the major section corners in the county and GPS them with Nebraska State Plane Coordinates to a one mile grid, We will slowly pick up the 1/4 & 1/16 corners

63. When PLSS corners in your jurisdiction are being remonumented or reestablished, are geographic coordinates (e.g., State Plane Coordinates) determined?

Answer	Respondents
Yes	13
No	7
Don't Know	32

64. Approximately how much is invested in PLSS maintenance on an annual basis?

Answer	Respondents
Less than \$5,000	12
\$5,000 - \$19,999	9
\$20,000 - \$39,999	2
\$40,000 - \$59,999	2
\$60,000 - \$79,999	0
\$80,000 - \$99,999	1
\$100,000 - \$119,999	0
\$120,000 - \$139,999	0
\$140,000 - \$159,999	0
\$160,000 - \$179,999	0
\$180,000 - \$199,999	0
\$200,000 - \$299,999	0
\$300,000 - \$399,999	0
\$400,000 - \$499,999	0
Greater than \$500,000	0

Please estimate how much staff time it took to complete this survey:

	Mean	Std Dev	Min	Max
Time Taken	~20 min	20 min	0	2.2 hours

# Nebraska Land Records Modernization Survey 2003

## Results by City

### Contact Information

### Organizational / Institutional Issues

#### Land Records Management Jurisdiction

1. Which category best identifies your organization's jurisdiction or service area? (Please check only one.)

Answer	Respondents
City	29
County	1
Other (Joint City-County)	1

2. For which geographic area(s) do you manage land records information/ data? (Please check only one.)

Answer	Respondents
County and all municipalities	1
County and some municipalities	2
Municipalities Only	22
Other	6

#### Comments:

- Deeds etc. are with Colfax County Clerk
- City and extra-territorial zoning jurisdiction
- City Assessing
- I don't "manage" the City's land records. All land records are managed and recorded in the county registrar of deeds. I only use them for building permit and zoning purposes.
- Municipality and two mile extraterritorial, zone we review, approve and maintain copies of land subdivision plats
- Ralston
- We only handle land records for building permits and utility billing purposes & zoning

3. Approximately how many full-time equivalent (FTE) employees are involved in responding to requests for parcel specific information (e.g., ownership, assessed value) on an annual basis?

Answer	Respondents
FTE	17
Don't Know	10

Tier	Mean FTE	Std Dev	Min	Max
All Cities	0.63	1.08	0	5
Tier 1	1.13	0.53	0.75	1.5
Tier 2	0.83	1.37	0	5

4. Does your office use any of the following means to provide public access to parcel specific information (e.g., ownership, assessed value) and/or parcel maps?

Answer	Respondents
Paper copies of existing records or maps	15
Computer files of existing records/maps	12

5. Can parcel specific information (e.g., ownership, assessed value) and/or parcel maps be accessed remotely from outside your office? (Please check only one.)

Answer	Respondents
In-Office Access Only	17
In-Office and Remote Computer Access	4
Other	6

Comments for "Other":

- Does not apply to City of Schuyler
- In process now of setting up an intranet for these records
- Information is provided by staff to walk-up customers. Information is also available thru the County Assessor's Web Site
- Zoning maps can be accessed on the City's website.

6. Does your organization place any of the following restrictions on public access to parcel specific information and/or parcel maps? (Please check all that apply.)

Answer	Respondents
Copyright	0
License Agreement	0
Restrictions on redistribution of data	2
Charge for the cost of reproduction	20
Charge fee in addition to the cost of reproduction	3
Other (e.g., "not that far in our process yet", "not applicable")	3

7. In your experience, which of the following incentives would you find most helpful in creating, updating, integrating and distributing land records information and data?

Answer	Respondents
One-Time Financial Support (grants, low interest loans, etc.)	13
Policy (executive order, legislative mandate, standards)	7
Educational (workshops, literature, guidebooks, on-line help, etc.)	9
Ongoing Partnerships (cost-sharing, work sharing, etc.)	16
Technical Assistance	12

8. Does your organization share its land records information/maps with other organizations?

Answer	Respondents
Yes	24
No	2
We have plans for the future.	5

9. Does your organization maintain intergovernmental agreements with other organizations for the distribution and sharing of land records information/maps?

Answer	Respondents
Yes	11
No	18
In progress	2

Comments:

- Our GIS is set up as a joint venture between, the City of GI, Hall Co. and GI Utilities. All share costs and info
- Share maps / information with County, PADD, and any other agency who requests it.
- The data is shared but there are no formal, written agreements

- We are currently working with Sarpy County and other municipalities in the County for the development of a Sarpy County GIS.
- We have a sharing agreement with Scotts Bluff County for parcel layer and remote access to assessor database.
- We have an inter-local with Sarpy Co and the other communities to create a GIS base map. Sarpy Co provides quarter section maps free of charge. We provide plats o Sarpy Co.
- With NPPD

10. Is there a need for better coordination, joint programs, etc. between state agencies and local governments in regards to land records creation and maintenance?

Answer	Respondents
Yes	21
No	6

Comments:

- Assessor records should be online
- Automatic updates support people etc.
- Cities and counties should integrate information. Grand Island is a good example.
- Counties with small municipalities will require to in order to develop their land record modernization.
- I don't know about State Agencies, but Cities and County governments need better coordination
- It would be helpful if everyone utilized the same standards.
- Property can be subdivided without the cities knowledge under the current procedures.
- Records need to be created so they can be shared between entities that are not working together.
- To insure a seamless and interchangeable GIS between entities

## Information Technology

11. Do you have access to a PC in your office?

Answer	Respondents
Yes	29
No	0

If “No”, please skip to IV. Cadastral Information

12. If you answered # 11 as “yes”, which computer operating system(s) do you use?

Answer	Respondents
Windows	29
Unix/Linux	1



13. Is your computer connected to other computers in the office or other computer systems?  
Please indicate all that apply:

Answer	Respondents
Don't Know	2
Local Area Network (LAN)	23
Other	3

14. If you use a computer system for land records, please indicate what the types of computer applications you use for land record management.

Answer	Respondents
Don't Know	4
Administrative package for Assessors	1
CAMA	0
GIS	8
Grantee/Grantor Indexes	0
Other (e.g., AutoCAD, Map Sifter (CAD), "subdivision plats only")	8

15. If you use computer applications for land record management, are those computer applications locally developed and supported or are they developed and supported by an outside vendor?

Answer	Respondents
Don't Know	7
ASI - TerraScan	3
Northeast Data	0
MIPS - County Solutions	0
Local/In-house Support	3
Other (e.g., ESRI, Windstone, Lamp Rynerson, CMS, County)	8

16. What is the underlying relational database management system (RDBMS) software that is used for land your records?

Answer	Respondents
Don't Know	12
dBase	0
DB2	0
FoxPro	0
INFO	1
Informix	0
INGRES	0
MS Access	2
MS SQL Server	1
Oracle	1
Sybase	0
Other (e.g., ERSI, Incode CMS)	7

17. Do you have access to the Internet?

Answer	Respondents
Yes	29
No	0

18. If "yes", please describe your Internet connection:

Answer	Respondents
Don't Know	
Dial-up	3
ISDN	0
Satellite	0
Cable Modem	4
DSL	11
T1, T3	5
AS/400 Network	0

## Cadastral Information

### Cadastral Maps

19. Does your organization (either on paper or computer) create, update, integrate or distribute cadastral maps (i.e., information/data that describes parcels; for example, property corners, boundaries, and parcels of land)?

Answer	Respondents
Yes	10
No	18

If “No”, please skip to Section V. Street Addressing.

20. What is the approximate number of parcels in your jurisdiction?

	Total	Mean	Std Dev	Min	Max
Parcels	~214,500	23,834	56,744	2,000	175,000

21. Who originally created your current or existing cadastral maps (either on paper or computer)?

Answer	Respondents
Created “in-house” by our staff	4
Created by an outside vendor	13

#### Comments:

- Cadastral data was converted from paper to digital by a vendor under 2 different contracts; one City and one County. Work was done between 1993 and 1996.
- Created by an outside vendor for Scotts Bluff County and then provided to us. Now maintained by County, (and by City within Scottsbluff City Limits).
- Currently on paper, but moving to computerized format.
- Developers submit subdivision plats
- Don’t know who created it.
- Eisenbraun Assoc. of Yankton S.D.
- Olson Engineering
- TerraScan - we have lots, not parcels at this time. Hoping to get parcels this year.
- TEC (The Engineering Company)

For the purposes of the following questions, *ongoing cadastral map maintenance* means updating parcel maps such as making parcel splits, combinations, adding subdivision plats, etc., on some regular basis (daily, weekly, monthly, annually). A *major cadastral*

*map revision* means the creation of new maps or replacement of maps on some irregular or multi-year basis.

## Ongoing Cadastral Map Maintenance/Updates

22. How often does your organization edit/update its cadastral maps as part of ongoing maintenance?

Answer	Respondents
Daily	3
Weekly	3
Monthly	2
Semi-Annually	3
Annually	2
Longer than annually	2

23. Who maintains/updates your organization's cadastral maps?

Answer	Respondents
Maintained/updated "in-house"	11
Maintained/updated by an outside vendor	3

Comments on outside vendor:

- The maps have not been updated for at least 10 years.
- Lamp Rynerson and Douglas Co. Assessor's.

24. If your organization's cadastral maps are regularly maintained/updated "in-house", approximately how many full-time equivalent (FTE) employees are involved on an annual basis?

Answer	Respondents
FTE	9
Don't Know	3

	Mean FTE	Std Dev	Min	Max
Cities	0.53	0.44	0.10	1.5

25. Please provide an estimated annual cost for ongoing maintenance and updates of your organization's cadastral maps:

Answer	Respondents
Less than \$5,000	6
\$5,000 - \$19,999	4
\$20,000 - \$39,999	2
\$40,000 - \$59,999	0
\$60,000 - \$79,999	0
\$80,000 - \$99,999	1
\$100,000 - \$119,999	1
\$120,000 - \$139,999	0
\$140,000 - \$159,999	0
\$160,000 - \$179,999	0
\$180,000 - \$199,999	0
\$200,000 - \$299,999	0
\$300,000 - \$399,999	0
\$400,000 - \$499,999	0
Greater than \$500,000	0

26. What are the source(s) of funding that support ongoing cadastral map maintenance/updates?

Answer	Respondents
General Fund / Regular Budget Allocation	14
Grants	0
Real Estate Transfer Fee	0
Sinking Funds	0
Other	0

27. Does your organization collaborate with other organizations to develop or maintain cadastral maps?

Answer	Respondents
Yes	8
No	6

28. If you answered # 27 with a "yes", with which organizations?

- County Assessor

- County Register of Deeds
- County, Police Dept, Real Estate agents, etc.
- Douglas Co Assessor
- Douglas Co.
- Saline County Clerk
- Scotts Bluff County maintains the entire county.
- Working with Utility Department, and plan to work with County.

## Major Cadastral Map Revisions

29. Does your organization conduct major revisions of its cadastral maps on some irregular or multi-year basis?

Answer	Respondents
Yes	5
No, major revisions are not necessary due to continuous maintenance/updates of cadastral maps.	9

If “No”, please skip to D. Computerized Format

30. How often does your organization conduct a major revision of its cadastral maps?

Answer	Respondents
1-3 years	1
3-6 years	2
6-9 years	0
≥ 10 years	3

31. Approximately when was the last major revision of your organization’s cadastral maps?

Answer	Respondents
Year	2
Don’t Know	5

	Mean	Std Dev	Min	Max
Year	2002	1.41	2001	2003

32. When is the next major revision of your organization's cadastral maps most likely to occur?

Answer	Respondents
Year	4
Don't Know	4

	Mean	Std Dev	Min	Max
Year	2004	1.41	2003	2005

33. Who generally conducts the major revision of your organization's cadastral maps?

Answer	Respondents
Revised in-house by our staff	2
Revised by outside vendor (e.g., Western Air Maps - Aerial Photos)	3
Combination of the two	3

34. If major revisions of your organization's cadastral maps are conducted "in-house", approximately how many full-time equivalent (FTE) employees are involved in the process?

Answer	Respondents
FTE (2 FTEs)	1
Don't Know	4

35. Please provide an estimated cost for major revisions of your organization's cadastral maps, in addition to staff time (estimated annual costs may include the FTE costs outline above).

Answer	Respondents
Less than \$5,000	1
\$5,000 - \$19,999	3
\$20,000 - \$39,999	2
\$40,000 - \$59,999	0
\$60,000 - \$79,999	0
\$80,000 - \$99,999	0
\$100,000 - \$119,999	0
\$120,000 - \$139,999	0
\$140,000 - \$159,999	0
\$160,000 - \$179,999	0
\$180,000 - \$199,999	0
\$200,000 - \$299,999	0
\$300,000 - \$399,999	0
\$400,000 - \$499,999	0
Greater than \$500,000	0

36. What are the source(s) of funding that support major revisions to parcel mapping?

Answer	Respondents
General Fund / Regular Budget Allocation	8
Grants	0
Real Estate Transfer Fee	0
Sinking Funds	0
Other	0

## Computerized Format

37. Has your organization created or acquired computerized parcel mapping?

Answer	Respondents
Yes	8
No, but our organization has plans for computerized parcel mapping.	6
No, there are no plans for computerized parcel mapping at this time.	1

If "No", please skip to Section V. Street Addressing.



38. If “Yes”, what is the status of your electronic parcel maps?

Answer	Respondents
In Progress	4
Completed	2
Parcel map is current to (date)	3
Other	0

Comments for “Parcel map is current to (date)”:

- Changes made as req'd due to replats, re-zoning, discovered errors, etc.
- Scotts Bluff County maintains current version. City also makes updates to own parcel layer based on AutoCAD drawings it receives when final plats are filed. Scotts Bluff County maintains current version. City also makes updates to own parcel layer based

39. Computerized parcel mapping was:

Answer	Respondents
Conducted in-house	1
Conducted by outside vendor	4
Combination of the two	3

40. What general methods were used to create your organization’s computerized parcel maps? (Please check all that apply.)

Answer	Respondents
Developed parcel boundary lines by digitizing/scanning existing paper/mylar/linen maps	1
Created computerized parcel boundary lines using coordinate geometry (COGO) from property descriptions	2
Digitized existing maps using aerial photography/orthophotos to adjust the boundaries	3
Incorporated computerized data (e.g. certified survey maps) from an outside source.	0
GPS (global positioning satellite)	0
Other	2
Don’t Know	1

41. Computerized parcel maps for your organization are now maintained:

Answer	Respondents
Maintained in-house	6
Maintained by outside vendor	1
Combination of the two	2

42. Are your computerized parcel maps “registered”? *Registered* computerized parcels maps are built using real world coordinates so that locational coordinates for parcel corners (latitude/longitude or State Plane Coordinates, etc.) can be derived from the drawings or electronic maps.

Answer	Respondents
Yes	4
No	4
Don’t Know	1

43. Are computerized parcels coded with unique parcel identification numbers?

Answer	Respondents
Yes	5
No	4
Don’t Know	0

44. Can an automated linkage be made between computerized parcel mapping and tax roll/assessment databases? (e.g., to support thematic mapping of attributes such as assessed value, assessment class, and ownership)

Answer	Respondents
Yes, such a linkage is simple	2
Yes, but on a project-by-project basis with some additional manipulation of computerized parcel mapping and/or the tax roll/assessment database	2
No	2
Don’t Know	3

45. Does your organization maintain any documentation about how your computerized parcel maps were created or maintained (Some examples might include, but are not limited to, metadata, data dictionaries, data catalogs, data libraries, etc.)?

Answer	Respondents
Yes	3
No	5
Don’t Know	1

46. Please indicate which information your organization works with, and its role(s) relative to that information, by placing an "X" inside each applicable box. Please check all that apply.

	Map/ Data User	Map/ Data Creator	Map/ Data Distributor	Map/ Data Updater	Don't have but it would be useful	Does this map/data have access/ redistribution restrictions?	
						Yes	No
Parcel Ownership	8	2	6	4	4	2	2
Parcel Taxation	4	1	5	4	4	2	1
Parcel Use	5	2	4	4	2	3	1
Right of Way Information	0	0	0	0	0	0	0
Publicly Owned Lands	0	0	0	0	0	0	0
Non-Taxable Lands (e.g., churches, recreation centers, etc.)	0	0	0	0	0	0	0
Road Centerlines	3	2	1	3	1	1	0
Easements	2	1	0	0	1	0	0

## Street Addressing

47. What addressing system(s) are used by your jurisdiction?

Answer	Respondents
Street Addresses	28
Rural Routes	2
Fire Numbers	1
Lake Lots	0
Other	2

Comments for "Other":

- Legal Description
- E911 and 911 Addressing

48. How does your jurisdiction maintain address information: (Check all that apply)

Type	Paper	Computerized
Master Street Address Guide (MSAG)	14	11
Emergency services (911 or E911 systems)	6	12
Individual department databases	7	8
Tax/Billing system	0	7
Other	1	1

49. If your jurisdiction maintains street centerline files, are address ranges associated with the centerlines?

Answer	Respondents
Yes	6
No	19
Don't Know	4

50. If "yes", is that information maintained in a computer database?

Answer	Respondents
Yes	5
No	4
Don't Know	0

## Geographic Information Systems (GIS)

51. Does your organization use geographic information systems (GIS) or computer aided design (CAD) technology to create and manage land records information?

Answer	Respondents
Yes, we use CAD	4
Yes, we use GIS	9
Both GIS and CAD	6
Neither	10
Don't Know	0

52. If you answered # 51 as “neither”, is your organization currently considering using GIS/CAD technology in the future?

Answer	Respondents
Yes	9
No	2
Don't Know	1

If you answered # 51 as “neither” or “don't know”, please skip to Section VII. Public Land Survey System.

53. Is your organization's GIS/CAD data created and maintained:

Answer	Respondents
Created/Maintained in-house	10
Created/Maintained by an outside vendor on an ongoing basis	5
Created/Maintained by an outside vendor on an occasional basis	1
Both by in-house and by outside vendor	7

Comments:

- Minor in house major outside vendor
- PADD is building a GIS database
- TerraScan/Windstone created a lot of the data, now I am to maintain it and keep it updated.
- The system is in the infant stage
- Eisenbraun and Assoc.
- We are overlaying 100 scale aerial photos with our base map with utilities
- Will be maintained by staff after electric inventory is completed by vendor

54. Which GIS/CAD software do you use?

Answer	Respondents
Autodesk (e.g., AutoCAD, AutoCAD Map)	17
ESRI (e.g., ArcInfo, ArcGIS, ArcView, ArcIMS, ArcSDE)	10
Bentley Systems (e.g., Microstation)	1
Intergraph (e.g., MGE, GeoMedia, GeoMedia Professional, FRAMME)	
Genasys II (e.g., GenaMap)	
GDS	
MapInfo	
Smallworld	
Other (e.g., Map Sifter, "We will use ESRI when we get GIS")	2

55. Are your GIS/CAD functions:

Answer	Respondents
Centrally administered with multiple departmental users	5
Multiple systems split among different departments	5
Single departmental user only	12

56. For what applications do you use GIS/CAD?

Answer	Respondents
Allocating Services	2
Assessment	1
Infrastructure Management	16
Land Use Planning	14
Natural Resource Protection	3
Parcel Mapping	12
Public Safety	9
Vehicle Routing	5
Site Selection	8
Water Resource Planning	4
Other (e.g., "anticipate future uses")	2

57. Approximately how many full-time equivalent (FTE) employees in your office are involved in GIS data development and maintenance on an annual basis? (The number of FTEs may include those involved with parcel maintenance and major map revision.)

Answer	Respondents
FTE	14
Don't Know	5

	Mean FTE	Std Dev	Min	Max
Cities	1.04	1.78	0	4.5

58. Please estimate the amount your organization spends annually on creating, updating, integrating, and/or distributing GIS data? (This estimate may overlap expenditures for cadastral mapping).

Answer	Respondents
Less than \$5,000	7
\$5,000 - \$19,999	5
\$20,000 - \$39,999	4
\$40,000 - \$59,999	1
\$60,000 - \$79,999	0
\$80,000 - \$99,999	2
\$100,000 - \$119,999	0
\$120,000 - \$139,999	0
\$140,000 - \$159,999	2
\$160,000 - \$179,999	0
\$180,000 - \$199,999	0
\$200,000 - \$299,999	0
\$300,000 - \$399,999	0
\$400,000 - \$499,999	0
Greater than \$500,000	0

59. What are the major limitations faced by your office in accessing or processing maps and information tied to street addresses that might be eased or eliminated by GIS? (Please attach additional sheets if necessary.)

- Better and quicker access to permanent records of utilities, public infrastructure, and public facilities
- Current availability of maps and address information is limited and not well coordinated. The city does not have a map showing addresses.
- existing map discrepancies
- Financial

- Funding, Time, Knowledge
- I don't know yet
- Lack of Staff and time
- Man hours to process data and keep it maintained. Need initial parcel layer of information from county.
- Obtaining ArcView software and training the individual in its use.
- Staff
- Technical know how

60. What business needs might be addressed with GIS? (Please attach additional sheets if necessary.)

- Capability to interconnect with other public entities and ability to access public records would make property ownership and other property information much easier and quicker to get.
- Current updated maps
- Don't Know.
- Engineering for municipal government
- I don't know yet
- Planning; Facility Locations

## Public Land Survey System (OPTIONAL)

61. Does your organization have an active program to maintain the Public Land Survey System (PLSS) section corners?

Answer	Respondents
Yes	3
No	16
Don't Know	6

62. How many PLSS section / quarter section corners have been recovered and remonumented? (Please check all that apply.)

Answer	Respondents
Number of PLSS corners that have been remonumented	1
Total number of PLSS corners	1
Don't Know	12

Comments:

- All of them – We have GPSed all section and quarter corners inside city limits
- 25, 50



63. When PLSS corners in your jurisdiction are being remonumented or reestablished, are geographic coordinates (e.g., State Plane Coordinates) determined?

Answer	Respondents
Yes	3
No	1
Don't Know	13

64. Approximately how much is invested in PLSS maintenance on an annual basis?

Answer	Respondents
Less than \$5,000	8
\$5,000 - \$19,999	1
\$20,000 - \$39,999	0
\$40,000 - \$59,999	0
\$60,000 - \$79,999	0
\$80,000 - \$99,999	0
\$100,000 - \$119,999	0
\$120,000 - \$139,999	0
\$140,000 - \$159,999	0
\$160,000 - \$179,999	0
\$180,000 - \$199,999	0
\$200,000 - \$299,999	0
\$300,000 - \$399,999	0
\$400,000 - \$499,999	0
Greater than \$500,000	0

Please estimate how much staff time it took to complete this survey:

	Mean	Std Dev	Min	Max
Time Taken	~20 min	20 min	0	2.2 hours